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Syntactic Change

A Minimalist Approach to Grammaticalization

IAN ROBERTS AND ANNA ROUSSOU

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A MINIMALIST APPROACH TO GRAMMATICALIZATION

The phenomenon of grammaticalization – the historical process whereby new grammatical material is created – has attracted a great deal of attention within linguistics in recent years. However, until now no attempt has been made to provide a general account of this phenomenon in terms of a formal theory of syntax. The aim of this new and original book is to do precisely that. Using Chomsky's Minimalist Programme for linguistic theory, Roberts and Roussou show how this approach gives rise to a number of important conceptual and theoretical issues concerning the nature of functional categories and the form of parameters, as well as the relation of both of these to language change. Drawing on examples from a wide range of languages, they construct a general account of grammaticalization with implications for linguistic theory and language acquisition.

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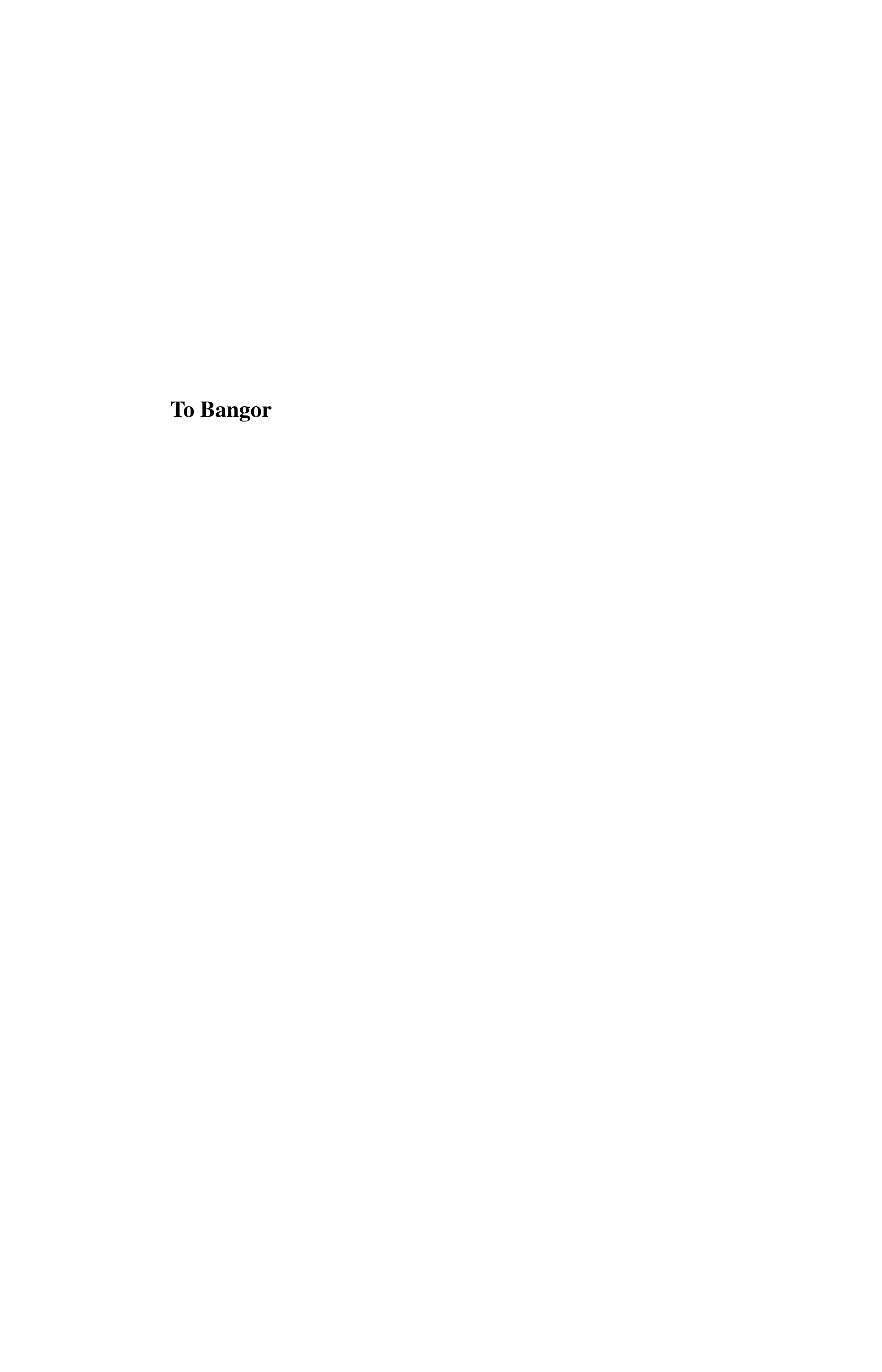
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Introduction

This book has two related goals. On the one hand, we wish to address the question of syntactic change in the context of the minimalist programme, by using (variants of) some of the technical devices that have been proposed in order to provide a general analysis of a pervasive diachronic phenomenon, grammaticalization. On the other hand, we wish to address a deeper question raised by the nature of the minimalist programme itself. A central idea behind the minimalist programme is the idea that language is in some sense a perfect system (the strong minimalist thesis: see Chomsky (1995:1–10), (2000:96f.), (2001:1–2)). Now, perfect systems do not vary over time, so the very existence of syntactic change appears to be a challenge to this thesis. The existence of synchronic variation among grammatical systems also poses an apparent problem for the strong minimalist thesis. The account of grammaticalization that we develop will lead to what we believe to be an interesting response to this problem, and an explanation for the existence of apparent variation and change in syntactic systems which we believe to be consistent with the strong minimalist thesis.

The term *grammaticalization* was first introduced by Meillet (1912) to describe the development of new grammatical (functional) material out of 'autonomous' words. Since then the topic has received much attention in the literature on language change, especially amongst typologists (see the references and citations in Janda (2001), and the impressive compendium of examples of the phenomenon in Heine & Kuteva (2002)). As Hopper and Traugott (1993:1–2) point out, the term 'grammaticalisation' can be used to describe either the framework that considers 'how new grammatical forms and constructions arise' or 'the processes whereby items become more grammatical through time'. The primary empirical goal of this book is to provide a general characterization of the diachronic phenomenon of grammaticalization within a modified version of Chomsky's (1995, 2000) minimalist framework, combined with an approach to language change of the kind argued for by Lightfoot (1979, 1991, 1998), Clark and Roberts (1993) and Roberts (2001). We do this by

developing the basic idea that grammaticalization involves the creation of new functional material, either through the reanalysis of existing functional material or through the reanalysis of lexical material. Within the set of assumptions we adopt, there is no need to treat grammaticalization as a separate framework, or for that matter as a distinct process of the grammar. Thus our central claims are: (a) that grammaticalization is a regular case of parameter change not fundamentally different from other such changes; (b) grammaticalization is therefore epiphenomenal, as recently argued by Newmeyer (1998), Joseph (2001a). This brings us to our main theoretical goal, which is to provide an understanding of the nature of functional categories, using grammaticalization as our tool, since it creates new functional material. We thus aim at providing a way of identifying the inventory of potential functional categories in the grammar of natural language.

We have just mentioned what we see as the basic nature of grammaticalization. Let us expand on this idea a little more; in Chapters 2 to 4 we discuss numerous cases, analysing them all in broadly the same way. In all these cases, we argue that grammaticalization is the creation of new functional material. It must, then, involve some sort of categorial reanalysis of lexical or functional material. The main question is how this kind of change can be captured formally. In what follows, we develop an account in terms of the central idea that such a change always involves structural simplification. The idea can be illustrated in simplified form with the development of the future expression in *tha* + VP, where *tha* is the future marker, from *thélo* + subordinate clause, where *thélo* is a verb, in the history of Greek (this change was discussed in Meillet (1912); and is analysed in detail in 2.3). It is clear that the Post-Classical Greek construction consisted of a biclausal structure, in that *thélo* heads a VP associated with the full panoply of functional material, including a subordinate clause introduced by the complementizer *hína* (cf. Joseph 1983, Horrocks 1997, Pappas & Joseph 2001). On the other hand, the Modern Greek construction with *tha* is standardly analysed as monoclausal, since both the verb and *tha* occur in the same clause (cf. Philippaki-Warburton 1992, Rivero 1994 among others). At the very least, then, the grammaticalization of *thélo* to *tha* involves the associated structural simplification in (1) (here CP is the clause, or Complementizer Phrase, see 1.2):

(1) $[_{\text{CP}} \ldots [_{\text{VP}} \text{ thélo CP}]] > [_{\text{CP}} [\ldots \text{tha VP}]]$

This change is a structural simplification at least in that the earlier structure contained two CP nodes, while the later one contains just a single CP. In Chapter 5 we will develop an account of language change which derives the fact that structural simplification is a natural mechanism of change, and therefore the fact that grammaticalization is a widespread and natural kind of change. Our general

characterization of grammaticalization, then, is that it is categorial reanalysis which creates new functional material, and that this reanalysis always involves structural simplification.

This kind of change is extremely prevalent across languages. Auxiliaries typically derive from 'full' verbs (the English modals are a much discussed and typical example, see 2.1 below). Determiners and pronouns often derive from demonstratives (all the Romance determiners and 3rd-person pronouns are reflexes of one of the two Latin demonstratives *ille* and *ipse*, see 4.1). Complementizers derive from demonstratives (English *that*), relative pronouns (Romance *que/che*), prepositions (English *for*), verbs of saying (e.g. Ewe *bé*, see Lord 1976), etc. (see Chapter 3). Heine and Kuteva (2002) provide an inventory of literally hundreds of cases of this kind of change.

In the typological literature where these and other changes have been documented, and the evidence for diachronic pathways has been accumulated (see, among others, Heine, Claudi & Hünnemeyer 1991, Heine & Reh 1994, Hopper & Traugott 1993, Lehmann 1985, Heine & Kuteva 2002), grammaticalization has been claimed to be universal. Indeed, Meillet (1912) pointed out that the process was one of only two ways in which new grammatical material could arise, the other being *analogy* (new paradigms developing by formal resemblance to existing paradigms). Our account of grammaticalization must thus explain this ubiquity. To this end we introduce the notion of markedness into the theory of parameters in Chapter 5.

The claim that grammaticalization follows a pathway of language change, that is, expresses a tendency, poses a challenge to the standard Principles and Parameters approach to syntactic change, whose exact nature we describe in detail directly. We thus see that in pursuing our analysis of grammaticalization, a number of theoretical issues that are of importance for both synchronic and diachronic syntax must be addressed. These questions all revolve around the familiar tension between empirical coverage and explanatory depth, which has been highlighted by Chomsky repeatedly since the 1960s. In a sense, then, the deeper purpose of the book is an attempt to deal with this tension in the diachronic domain, paying particular attention to the descriptive and explanatory potential of the notion of functional categories.

In the diachronic domain, the principal theoretical question that arises is whether language change is a deterministic process (as language acquisition is for example). In other words, the issue is whether we can identify clear pathways of change that make languages converge onto certain parametric settings. In the context of the theory of principles and parameters (whether in its minimalist manifestation or otherwise), we can view parameters as creating a space of possible variation within which grammatical systems are distributed.

The natural view of synchronic variation among grammatical systems is to think of them as randomly scattered in this space; and the natural view of diachronic change is to see it as a random 'walk' around this space. The prediction is then that there are no pathways or 'drift' in diachronic change, a view which has been consistently and vigorously defended by Lightfoot (see in particular Lightfoot (1998) for a recent restatement). This view is theoretically cogent, and to the extent that seeing syntactic change as parametric change is the key to an explanatory account of syntactic change (as we believe, with Lightfoot, that it is), then we are led to the view that there cannot be pathways, drift or natural tendencies in syntactic change. However, the phenomena of grammaticalization provide ample evidence of just such pathways or tendencies, and thus syntactic change must – at the very least at the descriptive level – be in a significant sense non-random.

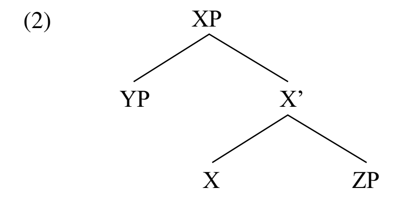
At this point then we seem to reach a paradox: on the one hand we accept that parameter changes cannot follow pathways. On the other hand, by acknowledging the prevalence of grammaticalization we appear to also accept that syntactic change follows some pathways. One way of resolving this paradox is to deny that whatever we have identified as grammaticalization exists. This is a logically viable option, but at the same time it goes against the empirical evidence. What this apparent paradox boils down to is a deeper theoretical question, namely that of reconciling the clear evidence for pathways of change at the descriptive level with the fact that an explanatory account of change must involve parameter change. We will propose in Chapter 5 that this can be done in terms of a theory of markedness which has the effect of creating 'basins of attraction' (in the sense of complexity theory) within the parameter space. In this way, we retain the explanatory force of the notion of parametric change, but make it compatible with the evidence that changes tend naturally to go in certain directions and not others – grammaticalization being a prime example. More generally, we see this as a way of reconciling the tension between descriptive and explanatory adequacy in diachronic syntax (and possibly in language typology – see Roberts (2001) on this).

In the synchronic domain, our account raises two theoretical issues. The first is very straightforward and central to current concerns: what is the characterization of a possible functional category? To put it another way, what is the inventory of functional categories that Universal Grammar (UG) makes available? Despite the centrality of this question, there are few proposals concerning this matter in the literature, to our knowledge. Chomsky (1995, 4.10) imposes a constraint on possible functional categories in the context of certain technical assumptions (see 1.3 and 4.5 for more detailed discussion of this point). In particular, Chomsky denies the presence of functional categories whose sole

role is to create place holders for moved material. Although we endorse this idea, we will argue against Chomsky's postulation of non-interpretable features (see 1.3), offering a more restrictive alternative on conceptual grounds. The most detailed empirical discussion of functional categories to date is undoubtedly Cinque (1999), but Cinque proposes a purely extensional (and preliminary) characterization of the set of clausal functional categories (see 1.2 (18) for a list). No intensional characterization is offered. If grammaticalization indeed involves the creation of new functional material through natural processes of change, then we can see this process as a kind of natural laboratory for the investigation of the question of what makes functional heads what they are. In Chapter 5, we will tentatively suggest a semantic characterization of the class of possible functional categories based on von Fintel (1995), which is empirically supported by our investigations of grammaticalization. This characterization has the merit of making the existence of functional categories appear closer to the general minimalist desideratum of (virtual) conceptual necessity (see the Introduction to Chomsky (1995) for a discussion of this notion).

It is clear at this point that the central theoretical construct that we will make use of, and indeed try to develop, in this book is the notion of functional categories. The basic idea behind the postulation of functional categories in recent principles and parameters/minimalist syntax is to ascribe full configurational status to closed-class, grammatical categories. In section 2 of Chapter 1 we will try to provide a justification of this idea. Here we want to simply say a few words about what functional categories are. The standard functional categories are I (Inflection, roughly corresponding to the Aux node of earlier generative grammar), C (Complementizer) and D (Determiner). Each contains closed-class grammatical morphemes, purely morphological material (bound morphemes or morphophonological features) or perhaps no overtly realised material at all, depending on the language. The central assumption made in recent principles and parameters/minimalist research is that each functional category has a full phrase-structural status. One way to understand this is to postulate that functional categories conform to the basic schema of X'-theory, which, following essentially Kayne (1994), we take to be as in (2):

(2)



YP is the specifier of X (SpecX) and ZP is the complement of X. We will illustrate how the main functional categories fit into the schema in (2) in 1.2.

Alternatively, we can adopt Chomsky's (1995) bare phrase-structure theory. This amounts to assuming for functional categories that grammatical features are able to merge autonomously with lexical items. This may or may not give rise to a canonical X'-schema like (2), depending on the exact nature of the bundle of features which constitutes the functional category. The essential idea in the context of bare phrase-structure theory, however, is that grammatical features are entered in the lexicon in the same way as 'full' lexical items.

The fundamental advantage of relating grammatical and morphological categories directly to phrase structure in this way is that it makes it possible to reduce two easily observed differences among languages to one theoretical construct. The two differences are: (i) languages differ in their inflectional morphology, and (ii) languages differ in which word orders are grammatical. These differences can be encoded as properties of functional heads. Difference (i) is directly encoded by the assumption that functional heads exist – so we say that languages can differ in that in one language a given functional head F has an overt exponent, while in the next language F has no exponent. Ultimately, this reduces to the fact that different languages have different lexica, in that sound-meaning pairs vary arbitrarily: the most fundamental and inescapable dimension of cross-linguistic variation. Difference (ii) is slightly more subtly handled: we assume, following Chomsky (1995, 2000), that functional categories are those which 'attract' other material, that is, they are the categories which act as triggers for movement. If we assume a universal base, following Kayne (1994), then the only way in which word-order differences can emerge is from differential triggering properties of functional categories.

The preceding paragraph actually outlines our view of parametric variation. We take it that functional categories are present as features in the lexicon. Each such feature may be associated to a PF representation, that is, a lexical item (difference (i)), or may be marked by a diacritic as a trigger for movement (difference (ii)). Note that both properties are entirely arbitrary. For concreteness, we assume that there is a universal set of such features, and that languages do not 'select' among them. All functional features are present in all languages (although they may not all be realized, *pace* Giorgi and Pianesi 1997) – see Cinque (1999:133). There are a number of technical points underlying these assumptions, which we will deal with as appropriate (see Chapter 5). Language acquisition consists in correctly assigning lexical items or the triggering property to the functional features: the features themselves, an X'-schema of the type in (2) (or whatever abstract principles determine the nature of phrase structure),

and the nature of the movement operation are innately given as aspects of UG. Language change consists of some change in the realization/attraction property of functional heads, that is, a change in the lexicon. In this respect, we agree with Longobardi (2001a) that no purely syntactic change is possible. Since our focus is on grammaticalization, we are naturally more concerned with the parameters underlying difference (i). However, we will see that difference (ii) is intimately implicated in such changes.

The second theoretical goal of this book is directly related to the diachronic issue discussed above. As mentioned there, the natural supposition that arises from the characterization of grammatical variation in terms of parameters is that grammatical systems will be randomly distributed in the space of variation defined by the parameters. However, even on fairly conservative assumptions regarding the number of parameters, this space must be large enough to admit, in principle, millions, if not billions, of systems. If so, then a random distribution of grammars in such a large space should not give rise to any discernible groupings of systems. But the results of four decades of work in language typology clearly show that grammatical systems group together around certain constellations of variant properties; in other words, certain parameter values tend to covary (this point is developed in more detail in Roberts (2001)). This uneven distribution of grammatical systems in the parametric space can be explained in terms of markedness: the 'basins of attraction' in the space will, over time, pull grammars into them. Over millennia, then, the parametric space will take on exactly the kind of uneven distribution we observe.[1] Our account of the prevalence of grammaticalization sketched above and presented in detail in Chapter 5 also accounts for the existence of discernible language types.

The pioneering empirical work on grammaticalization has largely been done by typologists, many of whom work in a 'functional' framework of one kind or another (see Newmeyer (1998, Chapter 5) for a discussion of the alleged links between grammaticalization and functional approaches to syntax). We hope that linguists working in these frameworks will find our proposals interesting and stimulating. We recognise that the formal approach that we adopt is not necessarily compatible with other frameworks; however, one of the implicit

1. The explanation being offered for the uneven distribution of grammars is a historical one, but not in the conventional sense. A conventional historical explanation would rely on genetic relatedness to explain typological similarities. It is clear that such an explanation cannot work. On the one hand, it is easy to observe that the languages of the Indo-European family show a range of typological variation; just looking at basic word order, we find SOV (Indic), SVO (Romance) and VSO (Celtic) languages. On the other hand, there is evidence for deep similarities among historically unrelated (or at best very distantly related) languages, the shared VSO typology, which appears to go well beyond the basic word order, of Celtic and Semitic is a case in point.

themes of this book is that the right kind of formal approach to grammaticalization can be quite revealing. We offer our ideas as an attempt to shed light on a central and intriguing property of language, which is clearly of common interest, from a novel perspective. We hope that this book will also be relevant to those researchers who may not be interested in issues of syntactic change, but are interested in theoretical questions such as the notion of functional categories and the nature of parametric variation.

1 Parameters, functional heads and language change

1.1 Introduction: the logical problem of language change

In the Principles and Parameters framework cross-linguistic variation is accounted for by means of assigning different values to a finite set of options, called parameters, that are provided by Universal Grammar (UG). In Chomsky (1981, 1986a) parametric options are associated with the principles of UG. To take an example, consider the Extended Projection Principle (EPP), which basically requires that all clauses have a subject. A parameter then determines whether this subject, when pronominal, is always overtly realised (in finite contexts at least). It is in English; it does not have to be in Italian. This is the 'pro-drop' – or null-subject – parameter; its effects are illustrated with the Italian and English examples in (1a) and (1b) respectively:

(1) a. Parla italiano.
'He/she speaks Italian.'
b. *Speaks Italian

In this model, the task of language acquirers is to set the right parametric values on the basis of the input they are exposed to. Thus UG along with the appropriate trigger experience yields a particular grammar. The task of the linguist, on the other hand, is first to identify the UG principles, and second to define the class of associated parameters. It is clear that the simplest possibility is that parameters are restricted to just two values; this desideratum has been largely followed in the literature.

Although this approach to parameterization seems to work for cases like the 'pro-drop' parameter in (1), it turns out to be insufficient once a wider range of parameters is taken into account. Consider, for example, Binding Theory, and in particular Binding Principle A, which states that an anaphor must be bound in its local domain. As Wexler and Manzini (1987) show, the notion of the local domain can be defined as the category that contains the anaphor and one of the following: (i) a subject, (ii) Inflection, (iii) Tense, (iv), indicative Tense, or finally (v) a root Tense. In other words, Binding Principle A is

subject to a five-valued parameter. Moreover, it is possible to find languages that make use of more than one value, depending on the type of anaphors they possess. Dutch is an example, as it has two types of reflexives, namely *zich* and *zichzelf*, which have distinct distributional properties. In particular, *zich* accepts a long-distance antecedent, while *zichzelf* behaves more like the English reflexive *himself/herself*, thus requiring a local antecedent (parameter (a) in the Wexler and Manzini (1987) system). This is illustrated in (2a) and (2b) respectively (cf. Koster and Reuland 1991 for an overview of the data):

(2) a. Max_i bewondert $zichzelf_i$/*$zich_i$.
'Max_i admires $himself_i$.'
b. Jan_i liet mij voor $zich_i$/$zichzelf_i$ werken.
John made me for him work
'$John_i$ made me work for him_i/*$himself_i$.'

Wexler and Manzini (1987) concluded that parameters must be associated with lexical items, offering further support for Borer's (1984) original claim. Regarding (2) then, the choice of the antecedent is a lexical property of the elements *zich* and *zichzelf*, and as Pica (1987) showed, it correlates with the internal structure of the reflexives. Attributing the parameter to the lexical properties of the anaphors allows us to maintain Binding Principle A as a non-parameterized principle, which states that anaphors must be locally bound. Parametric variation with respect to what counts as local is associated with the relevant lexical items.

The idea that parameterization is restricted to the lexicon has been successfully pursued in subsequent research, which has further limited the set of parameterized lexical items to functional categories (see Chomsky (1995, 2000) for a recent statement). Language acquisition is still seen as the process of parameter setting, albeit as specifically fixing the values associated with functional categories. It is uncontroversial that the lexicon has to be learned, and, on this view, parameter setting reduces to a facet of lexical learning. We can now view the initial state of UG as consisting of a number of principles and of open parametric options; the latter are associated with a specific set of lexical items, the functional categories. To illustrate this, let us reconsider the 'pro-drop' parameter: the EPP is not parameterized, but the inflectional category responsible for subject agreement, call it AgrS, is. In particular, if AgrS is in some sense rich enough, that is, has the right properties, to license and identify an empty pronominal subject, we have the Italian setting, yielding (1a); if not, then we have the English setting, predicting the ungrammaticality of

(1b) (Rizzi 1986a). Roughly speaking, children have to determine, on the basis of experience, whether their language has the English-type or the Italian-type AgrS. Similar considerations extend to (2). Questions that remain open in current research include the characterization of the class of functional heads and the definition of the ways in which functional categories can be parameterized. The latter point is discussed in section 3 of the present chapter. We consider the former question in more detail in Chapter 5, where we will make some suggestions based on the evidence provided by grammaticalization.

According to what we have said so far, the acquisition of syntax is viewed as the process of parameter setting. Within this framework of assumptions, syntactic change can be viewed as change in the parametric values specified for a given language. In other words, parameter values can change as a function of time. We can in fact observe this very easily by comparing the Modern Romance languages with Latin in respect of word order. Latin word order was rather free, but object–verb order clearly predominated; on the other hand, the Modern Romance languages are all verb–object. The contrast is illustrated in (3), with Italian representing Modern Romance:

(3) a. Ego . . . apros tres et quidem pulcherrimos cepi. (Pliny the Younger)
(Object) (Verb)
I boars three and indeed very-beautiful have-taken.
b. Io . . . ho preso dei cinghiali, tre e anche bellissimi.
(Verb) (Object)
'I have taken three and indeed very beautiful boars.'

Thus, if there is a parameter determining the relative order of verb and direct object, its value has changed in the development of Latin into Romance. The central issue for diachronic syntax in the context of Principles and Parameters theory is accounting for how and why this can happen.

Following a view that has been developed in terms of recent linguistic theory, primarily by Lightfoot (1979, 1991, 1998), we assume that parameter change is an aspect of the process of parameter setting. A change is initiated when (a population of) learners converge on a grammatical system which differs in at least one parameter value from the system internalized by the speakers whose linguistic behaviour provides the input to the learners. As the younger generation replaces the older one, the change is carried through the speech community. Of course, many social, historical and cultural factors influence speech communities, and hence the transmission of changes (see Labov 1972, 1994). From the perspective of linguistic theory, though, we abstract away from these factors and attempt, as far the historical record permits, to focus on change purely as a relation between grammatical systems.

The assumption that parameter change is an aspect of the process of parameter fixation raises an important issue for language acquisition. The issue is summed up in the following quotation from Niyogi and Berwick (1995):

> it is generally assumed that children acquire their . . . target . . . grammars without error. However, if this were always true, . . . grammatical changes within a population would seemingly never occur, since generation after generation children would have successfully acquired the grammar of their parents. (Niyogi & Berwick 1995:1)

As the above quotation shows, the standard paradigm for language acquisition is not immediately compatible with the observation that grammatical systems change over time. To be more precise, it is generally assumed that language acquisition is a deterministic process: its final state converges with the target grammar that acquirers are exposed to. However, if convergence is always guaranteed, then the crucial question is how changes can ever take place. Clark and Roberts (1993, 1994) refer to this issue as the logical problem of language change, and sum it up as follows:

> if the trigger experience of one generation, say g_1, permits members of g_1 to set parameter p_k to value v_i, why is the trigger experience produced by g_1 insufficient to cause the next generation to set p_k to v_i? (Clark & Roberts 1994:12)

The simple answer to this question, which again goes back to Lightfoot (1979), is that v_i is unlearnable. In this case language acquirers have to revert to some other parametric option, thus triggering a change in the system. This way, the new setting for parameter p_k amounts to parameter resetting in comparison with the target grammar. If this is correct, we have to weaken and refine the notion of determinism, along the following lines: language acquisition is deterministic to the extent that all parameters have to be set. This allows for p_k to receive a different value from that found in the input, therefore making space for language change. This of course does not imply that changes have to take place; indeed, most of the time convergence is 'successful' in that children arrive at the same parameter values as their parents – this is reflected by Keenan's (1996) principle of inertia (see also Longobardi 2001a). A change occurs when the trigger experience for a parameter setting provided by the input has become obscure or ambiguous. This can happen in a variety of ways, for example through language contact, morphophonological erosion, etc. Fleshing this idea out requires us to develop an account of the relation between the learner and the trigger; it also requires us to be very precise about the nature and format of parameters. We

will discuss parameterization in section 1.3; here we will focus on the relation between the learner and the trigger.

The logical problem of language change interacts with the logical problem of language acquisition. For the latter, the question is how children succeed in setting the parameters correctly on the basis of the input they receive, given that this input may be insufficient and degenerate (see the 'poverty of stimulus' argument of Chomsky 1986a). If by 'correctly' we mean complete matching with the adult setting, then the logical problems of language acquisition and language change become contradictory. If, however, by 'correctly' we mean simply fixing a value consistent with the trigger experience, as suggested above, then the contradiction does not arise. Let us call this the weakly deterministic view of language acquisition: the goal of acquisition is to fix parameter values on the basis of experience – all parameter values must be fixed, but there is no requirement for convergence with the adult grammar (although this happens most of the time).

The relationship between the learner and the trigger can be thought of as mediated by a device which takes experience as input and produces parameter values as output. The trigger experience is naturally thought of as consisting of sets of sentences (cf. Clark & Roberts 1993, Gibson & Wexler 1994, among others). Lightfoot (1998) and Dresher (1999) argue that learners use input forms as 'cues' for setting parameters. The trigger in this case is not sets of sentences but fragments of utterances (partial structures) (cf. also Fodor 1998). For Dresher (1999) each parameter has a marked and a default setting, and comes with its cue, as part of the UG specification of parameters. Lightfoot (1998:149), however, takes a much stronger view and argues that 'there are no independent "parameters"; rather, some cues are found in all grammars, and some are found only in certain grammars, the latter constituting the points of variation'. Let us illustrate this with the loss of the verb-second (V2) phenomenon in Middle English. The presence of exactly one constituent other than the subject in immediately preverbal position is a cue for the learner that a given language is V2. According to Lightfoot (who follows Kroch & Taylor 1997), the Northern dialects of Middle English had a V2 grammar, which at some point ceased to exist – Modern English is not V2, as the grammaticality of sequences like *Yesterday John left* shows. Lightfoot proposes that the change was triggered by the following: (a) interaction with speakers of Southern dialects which didn't have obligatory V2 and also didn't treat subject pronouns as clitics, so the *XP–subject pronoun–V* sequence in the input was evidence against a positive setting for the 'V2 parameter'; (b) the independent loss of all verb movement operations,

making verb movement to the second position impossible, pre-empting many V2 orders. In this way, the occurrence of the V2 cue was considerably reduced, leading to the consequent loss of V2. This approach, however, seems to involve circularity. It appears that V2 was lost because it was not cued, and that the cue was lost because V2 was undermined (owing to the factors given). It is not clear what the notion of cue is really explaining here; if we omitted it from our account, we would nevertheless have at least a plausible description of how V2 was lost. Also, Lightfoot's approach seems to involve a category mistake: cues are fragments of the trigger experience, sequences such as *XP–V* in the case of V2. But parameters are abstract properties of grammars, features of part of an individual's mental representation (his/her I-language). Although the notion of cue is useful, it must be kept distinct from the notion of parameter. Finally, Lightfoot's approach is too unconstrained: if there is no independent definition of cues, then we have no way of specifying the class of possible parameters, and hence the range along which languages may differ (synchronically or diachronically).

It is, however, possible to maintain that parameters can be independently defined and that learners also make use of cues provided by the input (this is closer to Dresher's view). Recall that according to current assumptions in the Principles and Parameters framework, parameters are lexical; it is also generally accepted that the lexicon has to be learnt, as it is language specific. There must be some learning device that enables acquirers to learn words (their syntactic, morphological, phonological and semantic properties). If parameters are linked to a subclass of lexical items, that is, functional elements, which also have to be learnt, then it follows that the same device is also responsible for setting parameters. This device may be part of UG, or it may be a separate device which interfaces with UG (we will tentatively assume the latter, mainly for clarity of exposition). Any part of the input that can provide the acquirers with information about the lexicon is a cue. This approach, unlike Lightfoot's, allows us to maintain both the notions of cues and parameters: cues are provided by the input, parameters are specified by UG and are set by the learning device on the basis of the interaction of cues and UG. The relation between the cues and the parameter values is indirect and is mediated by the learner.

We can make the notion of cue clearer if we consider the notion of parameter expression introduced by Clark and Roberts (1993:317):

(4) Parameter expression:
A sentence S expresses a parameter p_i just in case a grammar must have p_i set to a definite value in order to assign a well-formed representation to S.

As Clark and Roberts (*ibid.*) say: 'When a given datum expresses some parameter value, the learner will be under pressure to set that parameter to the value expressed by the datum.' This given datum is the trigger and is defined as in (5):

(5) Trigger:
A *sentence* S is a trigger for parameter p_j if S expresses p_j.

We can relate this notion of trigger to the notion of a cue by replacing 'sentence' in (4) and (5) by 'substring of the input text', as follows:

(4′) Parameter expression:
A substring of the input text S expresses a parameter p_i just in case a grammar must have p_i set to a definite value in order to assign a well-formed representation to S.

(5′) Trigger:
A substring of the input text S is a trigger for parameter p_j if S expresses p_j.

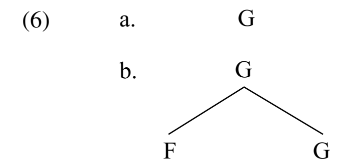
It is an empirical question what a substring may be. Arbitrarily, we will suppose that a substring can be no smaller than a morpheme (we are thus proposing that a morpheme is the minimal unit of grammatical analysis for language acquirers as well as for linguists) and no larger than a sentence (cf. Fodor 1998:17 for a similar proposal). If the parameter expression is robust enough, it will lead to the correct parameter setting. If, however, the parameter expression is ambiguous, then there must be some 'safety mechanism' in the learning device which leads to the assignment of a value – weak determinism requires this. This value will still be compatible with the input, but – again due to weak determinism – may differ from that of the target grammar, thus yielding a change.

The questions now are: (a) what is 'robust' parameter expression? (b) what is the 'safety mechanism' referred to in the above paragraph? We know of no good general answer to question (a), beyond observing that many parameters seem to be morphologically expressed, and when independent morphological or phonological changes conspire to remove or obscure this expression, a parameter change may take place (see Roberts 1999 on this). This answer is undoubtedly insufficiently precise and insufficiently general. Concerning question (b), we suppose, following Clark and Roberts (1993), that the learning device is computationally conservative in that it has a built-in preference for relatively simple representations. In other words, if the trigger is ambiguous, the learner will choose the option that yields the simpler representation. We will consider the question of how to define simplicity in detail in Chapter 5, but here we will provide a preliminary illustration of what we have in mind. Let

us assume that movement operations are adjunctions, as proposed by Kayne (1994); then movement always creates relatively complex representations, in the obvious sense that (6b) with F adjoined to G is a more complex structure than (6a), where no movement, and thus no adjunction, has taken place:

(6) a. G

b.



(Here G and F may have any amount of internal structure; in particular they may be either heads or XPs.) Loss of movement will lead to a reduction in complexity, that is, to a simpler representation. More precisely, if the learner postulates non-movement the simplicity preference will be satisfied. So movement must be robustly triggered (note that we are implicitly taking movement to be a parameter here – we develop this in section 3). If (6b) is not properly triggered, then (6a) will be preferred. Where (6b) changes to (6a) a movement operation is lost. However, there is another possible outcome where (6b) changes to (6a). The learner may analyse some instances of the moved category F as part of the inflectional system instantiated by G (this idea depends on the assumption that movement is always and only to a functional position – see section 3). This kind of 'misanalysis' results in recategorising a class of lexical elements as inflectional items; in (6b) F is reanalysed as G, essentially giving the structure in (6a). In other words, 'misanalysis', in the sense described here, can create new functional material. We will argue extensively in Chapters 2 to 4 that this kind of structural simplification is precisely the one that occurs in cases of grammaticalization. Another kind of structural simplification involves reanalysis of an XP, a category with a certain amount of internal syntactic structure, as a simple head X, a category with no internal syntactic structure. The same considerations relating to language acquisition apply to this kind of reanalysis as to the loss of movement, and we will see in Chapters 2 to 4 that this kind of reanalysis, among others, is also prevalent in grammaticalization.

To summarize, in this section we considered the general assumption that parameters are a property of lexical items. We discussed the general approach to language acquisition in the Principles and Parameters model, according to which the process is viewed as parameter setting. Syntactic changes, on the other hand, are the result of changing parametric settings. Learnability issues

connect to both language acquisition and language change, as there has to be some mechanism that allows the learner to set or reset parameters on the basis of the trigger experience. The latter happens when the trigger (or cue) is obscure. In this case, we propose that the learner will opt for the default option as part of the built-in preference of the learning device for simpler representations. The logical problem of language change is addressed in terms of the idea that the learning device is computationally conservative; a value v_i of parameter p_k can be changed where the trigger experience (or cue) for v_i is not sufficient to prevent a simpler option being chosen. This 'insufficiency' of the trigger experience can arise through the effects of other syntactic changes, phonological changes, language or dialect contact, etc.

One question that this approach gives rise to is: why are grammars not tending towards some maximally simple state, which, at the very least, would be free of movement operations? The answer is that the simplifications effected by changes are always local, and may increase complexity elsewhere in the system. In fact, grammaticalization is a case in point: as already noted by Meillet (1912), grammaticalization may increase the notional expressive power of the grammatical system. Von Fintel (1995:184) notes that under grammaticalization 'the meaning of a lexical category is composed with a functional meaning to yield a new, more complex functional meaning'. In our terms, grammaticalization may provide a functional category with new exponents – this will become clearer in the next two sections. But, as just sketched, grammaticalization nevertheless arises from the learning device's bias towards simpler representations.

In the remainder of this chapter we will make more precise what it means to say that parameters are lexically associated with functional categories, beginning with a general discussion of functional heads themselves.

1.2 Functional categories

In the previous section, we presented the recent Principles and Parameters approach to cross-linguistic variation, according to which parameters are associated with functional categories. Parameterization as such then is restricted to the lexicon. Syntax connects the Phonological and Logical Forms (PF and LF respectively), that is sound and meaning. This is achieved with the help of the two basic mechanisms: Merge and Attract/Agree (Chomsky 1995, 2000). Merge is a binary operation that recursively combines elements, thereby building phrase structure. Agree is the operation that manipulates combinations, by establishing a relation between lexical items within a syntactic space. A simple

example is the agreement that we see between the subject and the verb in a sentence like:

(7) John likes/*like apples.

The agreement *-s* on the verb is the morphological expression of the relation that holds between the subject and the verb.

Lexical items belong to various categories, and this information is relevant for the syntactic operations of Merge and Agree. Categories then are primitive symbols associated with lexical items. The distinction between lexical and functional categories has its antecedents in traditional grammar. While Nouns, Verbs, Adjectives, and (at least some) Prepositions are lexical categories, elements such as Tense, Complementizers, Determiners, Negation, to name but a few, belong to the set of functional categories. The distinction between two kinds of item is an old one (cf. the Aristotelian distinction between *substance* and *accidence*), and it comes under various names, such as open versus closed class or lexical versus grammatical categories. In general, the basic distinguishing property is that lexical categories have descriptive content while functional categories do not; instead they carry grammatical meaning (cf. Radford 1997, Chapter 2 for a recent introductory discussion).

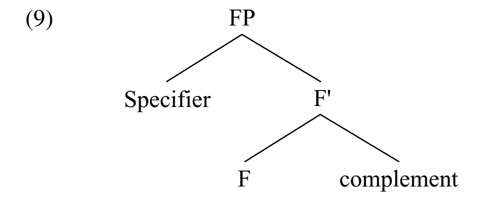
This distinction is widely accepted as one which holds in the lexicon. The question though is whether functional categories also have a syntactic representation. In other words, are functional categories also subject to syntactic operations, such as Merge and Agree? Some grammatical material seems to be purely morphological, and to have no role to play in syntax; for example, this seems to be the case of noun declensions or verb conjugations in languages like Latin or Classical Greek. Other material appears simply to duplicate other elements in the clause. For example, negation in French is realized by means of two elements, that is, *ne...pas* as in (8a), although only one of them (*pas*) is the 'true' negation. Similarly, expletives such as *there* in English double the postverbal subject in a construction like (8b) (the same can be argued for the subject agreement that we see on the verb in (7)):

(8) a. Marie *n'*aime *pas* Jean.
Mary not loves not John
'Mary doesn't love John.'
b. *There* arrived *three students*.

We can also see from (7) and (8) that grammatical material is lexically specified for morphological properties: *pas* in (8a) is a free morpheme, while *-s* in (7) is a bound one. Most importantly, grammatical properties such as those in (7)

and (8) turn out to be relevant in syntax as well: subject–verb agreement as in (7) is sensitive to the syntactic notion ‘subject’, while both *ne* and *there* in (8) have been argued to be syntactic markers of different kinds of scope (see Kayne 1984 on *ne*, Williams 1984 on *there*), also a notion standardly defined over syntactic structures. If this is correct, then we have to ensure that they are somehow syntactically present. In other words, we need syntax to be able to make reference to features associated with functional categories. Now, since Chomsky (1970), categories have been analysed as feature matrices. This means that it is possible – and, given the considerations just raised in connection with (7) and (8), desirable – to analyse grammatical features like agreement, negation, tense, etc., as syntactic categories. Given both the standard view of phrase structure (X’-theory), and the more recent Bare Phrase Structure of Chomsky (1995), that means grammatical features can function as heads which project a phrasal category containing a specifier and a complement, as follows (cf. (2) of the Introduction; here F is any feature):

(9)



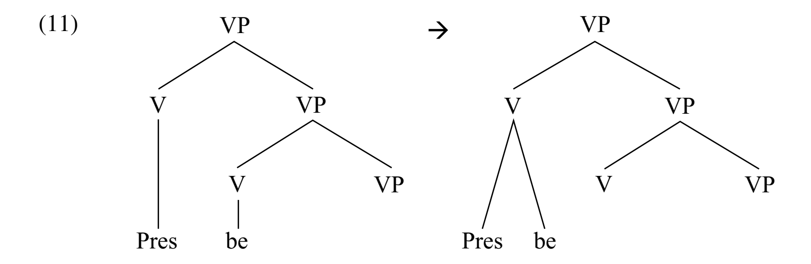
We will now provide some arguments in favour of having functional elements syntactically present in the sense just described. Let us begin by looking at the English auxiliary system:

(10)
a. Do you like fish?/ *Like you fish?
b. I don’t like fish/ *I like not fish.
c. Fred likes fish and Bill does/ *likes too.
d. I should go/ *I should do go/ *I do to go.

As the examples in (10a)–(10b) show, main verbs do not invert and cannot support negation; in both cases the auxiliary *do* must be present. Similarly, *do* can occur in elliptical contexts, while main verbs cannot – see (10c). The examples in (10d) show that the auxiliary *do* is in complementary distribution with modals, such as *should*, and with the infinitival marker *to*. The empirical evidence in (10) is the standard way of distinguishing between auxiliaries and main verbs. In the late 1960s and early 1970s, there was some debate as to whether data like that in (10) justified the postulation of a distinct category Aux, or whether it simply meant that certain verbs (e.g. *do, shall, have, be*, etc.)

were to be assigned various kinds of exception features. McCawley (1971) took the latter view. As he points out: 'Auxiliaries are exceptional by virtue of undergoing a transformation "tense-attraction", which combines them with the immediately preceding tense morpheme. All other transformations that might appear to treat auxiliaries in a special way (for example, subject verb inversion) are simply transformations that follow "tense-attraction" and have a structural description calling for the first verb.' He proposes the following structure:

(11)



In (11) the auxiliary *be* is attracted by the higher V which carries tense information (i.e. Present in this case). A similar approach is taken by Emonds (1970, 1976) who argues that verb raising attaches *have* and *be* (which, unlike modals, are treated as members of V) to the Aux node. Verb raising next feeds subject inversion. *Do*-insertion inserts *do* under V to the left of the main V, while it is verb raising again that places *do* under Aux. Finally, *do*-deletion deletes *do* where Aux appears immediately adjacent to VP. What Emonds and McCawley have in common is that they isolate a given position – the highest V for McCawley, Aux for Emonds – as the structural position associated with tense-marking, and that auxiliary verbs can move into that position. This is the position Chomsky (1981) called I(nflection), and which more recently has become known as Tense.

In addition to noting the common points between McCawley and Emonds, we can make two further observations about the English auxiliaries, both of which are relevant for understanding the notion of functional category. First, even if we categorize auxiliaries *do, be* and *have*, the modals, tense, even the infinitival marker *to* (see Pullum & Wilson 1977) as verbs, we have to accept that they are morphologically irregular, have special syntactic properties and form a closed class of items. It is also important to observe that they lack a central lexico-semantic property of verbs, namely argument structure (with the possible exception of dynamic modals; see 2.1). Second, tense, modals and auxiliaries project like other categories. In current terms, this means that Tense heads the phrasal category TP. Its Specifier is arguably the subject position

(this is proposed in Chomsky (1995, 4.10)) and its complement may be VP. Consider (10a–b) again: subject–Aux inversion indicates that *do* must have a syntactic position, as it can invert with the subject; the same holds for (10b) as *do* can support the negative element *not*. Furthermore, as Ross (1967) argued, deletion processes show that auxiliary elements are part of syntactic phrases:

(12) Fred could have been killed and Bill (could (have (been (killed)))) too.

As (12) indicates, any of the bracketed material can be deleted. Ross argues that the simplest account of these facts is to treat each bracketed constituent as a separate VP, headed by the respective verb or auxiliary. If we treat the highest auxiliary (*could* in (12)) as Tense, then we have a reason for thinking that it forms a constituent with the following bracketed material (this constituent may be T′, if the Specifier of TP is the subject, as just mentioned; this point does not alter the fact that deletion processes show that functional heads project phrasal categories).

Having seen some evidence in favour of TP, let us now turn to another functional element, the Complementizer. Bresnan (1972) argued for the syntactic presence of a C(omplementizer) position as part of the extended structure of the sentence notated as S′ (as distinct from the 'core' sentence S, so subordinate clauses were assigned a structure like *[$_{S'}$ that [$_{S}$ John left]]*). Clearly, Complementizers like *that* and *if/whether* differ in that the former appears with declaratives, while the latter introduce embedded interrogatives. The C position thus carries information about clause-type, and as such it is natural to think of it as the head of the subordinate clause. Given that C can also bear the +wh specification (as in *whether*-clauses), its Specifier can be identified as the landing site of wh-fronting (see Chomsky 1986b). The structural complement of C is TP.

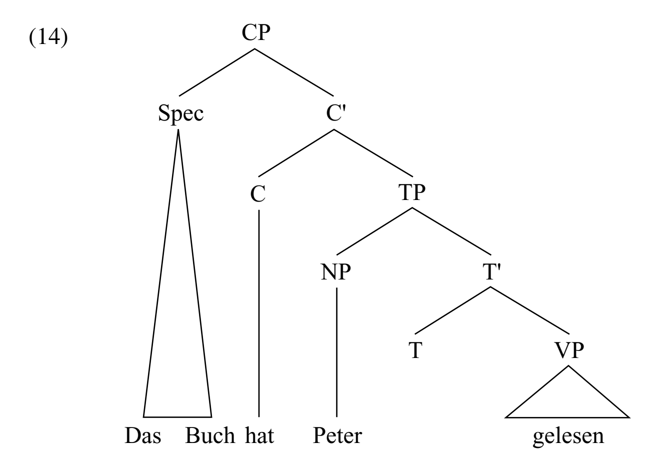
C plays an important role in the analysis of other phenomena. For example, den Besten (1983) showed that many main-clause inversion processes target this position, so C must also be the head of main (or root) clauses:

(13) a. Peter hat das Buch gelesen.
Peter has the book read
b. Das Buch hat Peter gelesen.
*Das Buch Peter hat gelesen.
'Peter has read the book.'

This is the well-known case of the verb-second (V2) phenomenon found in root declaratives in nearly all Germanic languages (and already mentioned in the previous section). The obligatory subject–Aux inversion in (13b) suggests

that the auxiliary has moved to a higher position, namely C. Notice that even if we treat auxiliaries as a class of defective verbs, we cannot do the same with complementizers. Thus, C at least is a grammatical element that has syntactic reality. The availability of inversion in matrix declaratives in V2 clauses, as in (13), brought to attention the intimate relation that holds between complementizers and auxiliaries, or to be more precise the relation between the C and T heads (cf. Platzack 1987 on Germanic, tensed complementizers in Irish discussed by Cottell 1995, etc.). This relation of course further supports the claim that T elements must be syntactically represented. Thus there are at least two functional elements, C and T, that project syntactically. This gives rise to a structure like the following for an example such as the well-formed sentence in (13b):

(14)



Here we see how both CP and TP follow the X′-schema (see (9)). We also see that TP is the complement of C and VP is the complement of T. The properties that characterize the C-T system have been extended to the nominal system, leading to the postulation of a D(eterminer) category that takes the NP as its complement (cf. Abney 1987, Horrocks & Stavrou 1987, Szabolsci 1983/1984, for some early approaches).

Having provided some evidence for the syntactic presence of categories such as C and T, mainly based on English, let us now turn to their morphological properties. Consider C, for example, which in English can be realized by means of free morphemes, such as *that, if, whether*. At the same time, question formation in (10a) and Germanic V2 in (13) show another kind of morphological realization of C, namely by means of moving a verbal element to the C position, giving rise to inversion. In other languages, complementizers are realized by

means of affixes, as is the case in Korean (a rigidly head-final agglutinating language – see Cinque 1999:53–54 and the references given there):

(15) cap-hi- si- ess- ess- keyss- sup- ti- kka
V- Passive-Agr Ant Past Epistemic Agr Evid Q
'Did you feel that (unspecified argument) had been caught?'

Here (interrogative) C is realized by the suffix *-kka*. It is a matter for debate whether languages like Korean are C-final, or whether TP moves to the Specifier of CP (see Kayne 1994 on the latter possibility). It is also possible to find languages which have no realization (alternatively use a zero morpheme) for C; this is in fact an option in English under certain conditions (cf. *I said (that) John left*). The same pattern can be found in the T domain: elements indicating tense, mood, etc., can be realized as free morphemes, like English modals; as bound ones, like the passive, epistemic and evidential morphemes in (15); or receive no realisation at all, as in the English simple present. Similarly, D can be free (as in English), bound (as in Rumanian) or zero (as in Latin). Thus, to summarize the discussion so far, we see that functional categories are subject to cross-linguistic variation in their realization, are like normal lexical categories in that they can project their properties, but differ from normal lexical categories in being closed-class and (as is clear when we compare auxiliaries and main verbs in English) in being inherently 'defective' in various ways.

In the recent theoretical literature, it is possible to identify two main views on functional categories: one is to deny their existence, the other to accept them. We have already provided evidence against the first view, as grammatical information is relevant for syntax and appears to have configurational instantiations. Further evidence comes from the areas of typology, diachrony, and language acquisition. In particular, typological studies have shown that languages undeniably differ in word order and morphology. As we mentioned in the Introduction, positing functional categories, and making them the locus of cross-linguistic variation allows us to reduce these two axes of variation to one. Regarding diachrony, it is one of the aims of this book to provide evidence from grammaticalization for the syntactic presence of functional elements (see also the first section of this chapter). Finally, recent work on language acquisition, starting with Hyams (1986) and Radford (1990), has shown the relevance of functional categories in the development of grammars, as early grammars differ from the adult ones in the way functional categories are realized.

Having argued then that functional categories must be syntactically present in some way, various options are open for how this idea may be implemented – particularly in accounting for cross-linguistic variation in word order and

inflection. There are in fact various ways ranging from accepting a very small to a quite large number of functional heads. The first of these approaches could be called the 'What you see is what you get' (WYSIWYG) analysis. As its name implies, the only functional categories postulated as present in a given language, or even a given sentence, are the ones for which we see some kind of realization. On this view, it is a matter of parametric variation as to which functional heads are present in which languages. For example, Grimshaw (1997) proposes that structures can 'stretch', or be compressed, even in the same language, depending on the number of lexical items available. To illustrate this point, consider (16):

(16) I think [$_{VP}$ it rained] (Grimshaw 1997:410)

According to Grimshaw, the embedded clause here is just a VP, as no auxiliaries or complementizers are present to instantiate T or C. However, as the examples in (17a–c) show, this can't be right: if the subject was inside the VP, then substitution, fronting or deletion of the VP should also include the subject, contrary to fact:

(17) a. *do so*: I thought it rained and *(it) did so.
b. *VP Fronting*: I thought it rained and rain it did/*it rain did.
c. *VP Deletion*: I thought it rained and *(it) did.

Thus at least TP must be present.

Grimshaw's (1997) analysis has to account for cross-linguistic variation in a different way by imposing a different ranking of constraints across languages. The result of this is the reduction of functional heads at the expense of a proliferation of constraints. However, it is a conceptual consequence of the distinction between syntax and phonology that certain elements may be present at one level and absent at the other. We therefore expect that syntactic categories can be silent. So there is no conceptual advantage in a position like Grimshaw's. The next question then is whether this kind of view has empirical advantages. The answer seems to be negative for a number of reasons. Clearly, Grimshaw's analysis of (16) cannot be right, as we have just seen. More generally, though, WYSIWYG approaches complicate the statement of cross-linguistic variation, as we have to assume that variation lies in differing selections from a universally given pool of categories such that simple sentences may have quite different structures in different languages; but if functional categories have semantic content, then we might expect that simple declarative sentences all have the same category across languages – this assumption is natural from the perspective of

the mapping from syntax to semantics, and simplifies the task of the language acquirer. However, this is explicitly denied by the WYSIWYG approach, which may say, for example, that German main clauses are CPs while English ones are VPs. Also, grammaticalization is harder to understand on the WYSIWYG view. If grammaticalization involves the development of new functional material, it must be analysed as a structural change rather than a simple category change. Given the assumptions about learning and change articulated in the previous section, structural change is hard to account for (in fact, the innovation of whole phrases is impossible on this view – surely a desirable result in the light of the logical problem of language change). Categorial reanalysis is a natural change, though, as we sketched there (see the discussion of (6)).

Another possibility is to assume that functional categories are always present, but in a very restricted fashion. For example, Chomsky (1995, 2000) argues that categories like C, T and D are present as they carry clause-typing, temporal and referential information respectively. Other functional categories that were postulated in earlier versions of the theory, such as subject agreement (AgrS) and object agreement (AgrO) should be dispensed with, given that they are not conceptually necessary (see Chomsky 1995, 4.10 and section 4.5 of the present work for discussion). This looks like a viable option, but the problem is that this kind of reduced structure brings along other complications. In particular, in order to accommodate lexical material structurally we need to assume that there can be multiple Specifiers, subject to parametric variation. Although it is desirable to keep the number of functional heads to a minimum, this kind of approach has the consequence of becoming less restrictive.

There are at least two further possible approaches. One is to say that we accept a relatively large number of functional heads, provided we find empirical support for their existence. This is the line of reasoning followed by many recent studies in different ways. For example, Kayne (1994, 1998) accounts for certain ambiguities (e.g. in *I will force you to marry no one*), which in earlier frameworks are assumed to involve covert movement in order to determine scope (of the quantifier *no one* in the example just given), by means of overt movement to a number of functional projections. The existence of functional positions is justified on this basis, but there is no further attempt to justify their presence conceptually by means of identifying the properties that trigger movement in the first place.

Cinque (1999) argues for a number of functional heads based on the distribution of adverbs. Each position carries the property identified with the interpretation of the adverb, resulting in the following set (we give only the labels of

the categories; from left to right, each takes the maximal projection of the next as its immediate structural complement in the sense of the X′-schema in (9)):

(18)
$\text{Mood}_{\text{Speech Act}}$ $\text{Mood}_{\text{Evaluative}}$ $\text{Mood}_{\text{Evidential}}$ $\text{Mod}_{\text{Epistemic}}$ T(Past)T(Future)
$\text{Mood}_{\text{Irrealis}}$ $\text{Mod}_{\text{Necessity}}$ $\text{Mod}_{\text{Possibility}}$ $\text{Asp}_{\text{Habitual}}$ $\text{Asp}_{\text{Repetitive(I)}}$
$\text{Asp}_{\text{Frequentative(I)}}$ $\text{Asp}_{\text{Continuative}}$ $\text{Mod}_{\text{Volitional}}$ $\text{Asp}_{\text{Celerative(I)}}$ T(Anterior)
$\text{Asp}_{\text{Terminative}}$ $\text{Asp}_{\text{Generic/progressive}}$ $\text{Asp}_{\text{Perfect(?)}}$ $\text{Asp}_{\text{Retrospective}}$ $\text{Asp}_{\text{Proximative}}$
$\text{Asp}_{\text{Durative}}$ Voice $\text{Asp}_{\text{Prospective}}$ $\text{Asp}_{\text{SgCompletive(I)}}$
$\text{Asp}_{\text{PlCompletive}}$ $\text{Asp}_{\text{Celerative(II)}}$ $\text{Asp}_{\text{SgCompletive(II)}}$ $\text{Asp}_{\text{Repetitive(II)}}$
$\text{Asp}_{\text{Frequentative(II)}}$ $\text{Asp}_{\text{SgCompletive(II)}}$

This 32-head structure, as Cinque stresses, is a conservative estimate of the number of functional heads in ‘TP’. No account is taken here of Negation Phrases or Agreement Phrases, for example. A similar approach is also taken by Manzini and Savoia (forthcoming) and Poletto (2000) who postulate a number of functional heads in the C and T domain, based primarily on the possible clitic strings found in Italian dialects and their interaction with verb movement, negation, particles, etc. Giorgi and Pianesi (1997) adopt another variant. They assume a universal set of functional features, all of which are in principle able to project – in this respect their approach is like those just mentioned. However, they also assume that – while there is a universal hierarchy of functional projections – features can ‘scatter’ over a structure in different ways in different languages. To put it another way, features can syncretize onto heads as long as the universal ordering (which is thus not a total ordering, in the technical sense) is not violated. Cinque (1999:133) criticizes this approach on the grounds that it is excessively complex (a special convention is needed to interpret syncretic heads); we will return to this issue in our discussion of markedness in Chapter 5.

The results of these approaches are no doubt enlightening and can complement an alternative view which attempts to identify functional heads on the basis of their interpretation. This is the view that we will pursue in the present book. In particular, we will argue that only those functional heads that have logico-semantic content can be present. This allows us to postulate a rather large number of functional heads, but at the same time the requirement for interpretability constrains what can be a functional head. For example, functional projections that play the sole role of being place-holders cannot exist. We sketch this approach in the next section, and return to it in detail in Chapter 5.

To summarize, in the present section we considered the reasoning behind accepting functional (grammatical) elements as syntactic entities. It is clear that

the presence of functional elements in syntax has considerable implications for typological studies, for the study of diachrony as well as acquisition. The next question of course is to identify what does and does not count as a syntactic functional head. We fully address this question in Chapter 5. In the next section, we will present in detail how we see functional heads providing the means to express cross-linguistic variation.

1.3 The nature of parameters: interface interpretation of functional categories

So far we have established a couple of main points. First, cross-linguistic variation is associated with functional elements and is restricted to the lexicon. Second, language acquisition is the process of setting parameters, while syntactic change is the result of changing (resetting) parametric values, in the sense discussed in 1.1; the parameter-setting device may, under certain conditions, fix a parameter *p* differently from the value assigned to *p* in the grammar that underlies the trigger experience. Finally, functional categories are syntactically present: they project their categorial features following the X′-schema in (9). On this basis, they are manipulated by syntactic operations such as Merge and Agree. What we need to do next is to clarify the nature of parameters, so that we can provide an account of grammaticalization. Since parameters are associated with functional heads, we need to specify the lines along which these heads may vary.

The approach we will outline here is based on Roberts and Roussou (1999), who aim at giving expression to the idea that movement, cross-linguistic variation and at least some morphophonological properties are reflexes of a single property of the computational system of human language (C_{HL}). This property of C_{HL} is driven by the interfaces, and is referred to as **interface interpretability**. The analysis takes the standard view of the interfaces as PF and LF, that is, the interfaces with the Articulatory-Perceptual and the Conceptual-Intentional systems respectively. Interpretability is the property of mapping a syntactic feature onto a PF or LF expression. To take a very simple example, the noun *table* maps onto a PF representation (/teibl/) and an LF representation, that is, its denotation ([[table]]). We cannot go into detail here as to the nature of the PF or LF representations, but it suffices to state quite simply that, in principle, any syntactic symbol may or may not be mapped onto a PF or LF representation. The lexicon provides the information determining the mapping. For ease of exposition at this point we could designate a syntactic symbol which has a PF mapping as +p, and a syntactic symbol which has an LF mapping +l. So *table*

is both PF- and LF-interpretable. In fact, we can observe that the lexical entries of lexical categories, such as Nouns and Verbs, always contain a specification +p, +l.

Consider next a functional element such as C, which, as we mentioned in the previous section, provides information about clause-typing, among other things. This kind of information contributes to the interpretation of the sentence, so we take C (or more precisely the features associated with C) to be LF-interpretable, that is +l. We saw in the previous section that the realization of C is subject to parametric variation: a matrix declarative C in German is realized by means of a verbal element, which is partly responsible for the V2 construction, while its English counterpart receives no such realization. Instead the matrix declarative C in English is not spelled out, or alternatively is spelled out as zero. Another example of parametric variation was discussed in section 1.1 in relation to the 'pro-drop' parameter. Let us assume that AgrS is the position associated with the nominal features of the subject. As such it receives an interpretation at LF (+l)[1]. Its realization, however, differs across languages. For example, English AgrS requires an overt subject, while its Italian counterpart allows for a null subject. We see then that functional elements are not necessarily +p. Variation in ±p leads to cross-linguistic variation in which functional categories are overtly realized, as we will see in detail below. In general, then, we see that functional categories may be defined as that class of syntactic categories which is not obligatorily +p.

Among the functional features, Q, WH, Neg, T and D, at least, are LF-interpretable, that is, +l. These features clearly contribute to the interpretation of any phrase-marker they appear in. We assume that UG contains a vocabulary of substantive universals, which are realised as functional features in every language. These are the interpretable features. On the other hand, the ±p property varies across languages. In fact, *pace* Chomsky (1995, 2000, 2001), we do not postulate uninterpretable functional categories or features. We believe that it is possible to maintain that all such features are LF-interpretable. If so, then there are no [−l] features.

The ±p and ±l properties are lexically determined, and as such are listed in the lexical entries of morphemes (cf. Cormack & Smith 1999 for a slightly similar approach). Assuming that lexical items are bundles of features, we can say that any category with N and V features is always +p, +l, while functional

1. Chomsky (1995, 2000) argues against the postulation of an AgrS category, on the grounds that phi-features are interpretable for nominals and not for verbs. However, if we take AgrS to correspond to a position that encodes the nominal features of the subject in the clause structure, then its presence becomes legitimate as these features are clearly interpretable. See section 4.5.

categories are +l, ±p. It is interesting to observe that functional heads, although they may have interface content, always have relatively impoverished content as compared to lexical heads. For example, a good approximation of the content of 'verbal' functional material (auxiliaries, aspect, tense) is that it is lacking in argument structure. Similarly, +p functional heads are almost always phonologically 'light', often lacking in stress, or failing to meet the criteria for minimal wordhood (see McCarthy & Prince 1986), as is the case for monomoraic *the* and *a* in English. It may be then, that functional elements fall below certain threshold values for phonological and semantic content even when they have interface properties. This idea may also contribute to an account of why grammatical systems vary and change, since the crucial PF information is presented in a 'weak' form. We return to this point in Chapter 5.

Let us notate a functional feature F that requires a PF realization as F*. Parameterization is seen as the random assignment of the diacritic * to features typically associated with functional heads. Where the diacritic is assigned to a feature, that feature, F*, must have a PF realization. Again, * is assigned to F in the lexicon, following Borer's (1984) idea that parametric variation is a facet of the lexicon. The overall conception of the lexicon, then, is that it contains the following elements:

(19) a. Lexical items, specified as ±V, ±N, with PF and LF properties given
b. Substantive universals encoded as interpretable features of functional heads
c. *assigned in a language-particular fashion to (b)

The only variant property is the assignment of *. The diacritic * does not apply to lexical heads, as these seem to be inherently associated with phonological features. The diacritic * is the expression of a relation between functional features and morphophonological matrices (overt or zero morphemes). Notice that under this view of variation there is no selection among the universal set of features. In other words, all languages have the same set of functional features; what varies is whether and how these features are realized in PF. This seems to be the null hypothesis and is in principle open to falsification, although Cinque's (1999) results suggest that the null hypothesis is correct. Thus there is no parametric variation in this respect (see also our discussion of what we called WYSIWYG models in the previous section).

Let us now turn to the PF realization of F*. This can be achieved in two ways: by Move or by Merge. Which option is taken depends on what the lexicon makes available, but the most economical is always preferred. For this reason, Merge is always preferred over Move. If the lexicon provides a

morphophonological matrix for F*, then this matrix will be F*'s realization, and Move is unavailable. Conversely, if the lexicon has no such matrix for F*, material from elsewhere must be moved to F (subject to the usual constraints on movement). Alternatively, we can view * as the morphophonological matrix for F; in this way, its cross-linguistic arbitrariness becomes completely natural – as de Saussure ([1916] 1972) pointed out, the relationship between linguistic elements and their morphophonological instantiation is arbitrary. We thus see a further dimension of parametric variation along the Move versus Merge axis. Since these are the only ways of associating lexical material with syntactic positions, they represent natural options.[2] So we have the following system of parametric variation:

(20) a. F* ? Yes/No
b. If F*, is it satisfied by Move or Merge?

The least economical option is Move. Following Clark and Roberts (1993) we might therefore expect this to represent the marked option, the one for which robust evidence must be available to language acquirers. At the same time, Merge would be the less marked option. This is crucial for the account of grammaticalization we will offer in the following chapters.

Before concluding this section, let us briefly illustrate how this system of parametric variation works (for further details see Roberts & Roussou 1999, 2002, Roberts 2001). We will give two examples: yes/no questions and wh-questions. Consider first yes/no questions: the feature responsible for giving a clause this interpretation is identified as Q. Since this is a clausal property, it is natural to associate Q with the head position of the clause, that is, C. We then observe the following variation:

(21) a. Did John see Mary? (English: Q^*_{Move})
b. A welodd John Mary? (Welsh: Q^*_{Merge})
c. Jean a vu Marie? (Colloquial French: Q is silent)

The PF realization of Q varies as a function of what the lexicon makes available: English has Q*, but no Q particle, and so movement (of T) is chosen. Welsh has Q* and a Q particle (*a* in (21b)), and so movement is blocked by the more economical Merge. In Colloquial French (21c), Q has no PF realization. In

2. There is one further possible option, namely that F* may be associated with a morphophonological matrix which is a syntactic affix, and which hence triggers both Move and Merge, following the Stray Affix Filter (or whatever constraint this follows from). From an economy perspective, this option is equivalent to Move (on the assumption that Merge is costless, cf. Chomsky 1995), but see Chapter 5.

this case, interrogative force has no overt syntactic realization and is marked purely by intonation. In other words, taking F to be Q, we find the two possible realizations of Q* by Move and Merge in English and Welsh respectively. The Q option is attested in Colloquial French.

Consider next wh-questions. We know that in some languages, wh-phrases are fronted to clause-initial position, as in English, while in other languages, they remain *in situ*, as in Chinese (cf. Cheng 1991 for a typological discussion). The cross-linguistic pattern shows more variation than that, but for present purposes we restrict our attention to a few simple cases:

(22) a. Who did John see – ?
b. Hufei chi-le *sheme* (ne) (Chinese, Cheng 1991:112)
Hufei eat-asp what Q_{wh}
'What did Hufei eat?'
c. Mona shaafat *meno*? (Iraqi Arabic, Wahba 1991:253)
Mona saw whom
'Who did Mona see?'

As (22a) shows, English has wh-fronting, while Chinese (22b) and Iraqi Arabic (22c) illustrate wh-in-situ. Moreover, in main-clause questions English requires subject–auxiliary inversion in addition to wh-fronting:

(23) a. *Did John see who?
b. *Who John saw?

Regarding yes/no questions we suggested that the auxiliary *did* realizes the Q feature of C. As the ungrammatical (23a) shows, the wh-phrase must also front. Let us assume then that while *did* realises the Q feature, it does not identify the clause as a wh-question. In other words, the wh-C must also be spelled out as such. Given that the wh-feature is part of a DP, the whole wh-phrase is fronted and realises wh-C*. Similarly, absence of auxiliary inversion in (23b) gives rise to ungrammaticality as the Q* is not spelled out. We also find wh* in constructions which are not interrogative, and which as such lack Q. This is the case for exclamatives, for example. Here, subject–auxiliary inversion is impossible, and wh-movement obligatory, as (24) illustrates:

(24) a. What a nice guy he is!
b. *What a nice guy is he!
c. *He is what a nice guy!

This pattern follows straightforwardly in our system from the fact that these are non-interrogative wh-constructions, and so Q* is absent but wh* is present.

Turning now to the Chinese example in (22b), we notice that there is no wh-movement, as the element *sheme* remains *in situ*. That might lead us to the conclusion that wh-C in Chinese does not require an overt realization. However, this is wrong for a number of reasons. First, Chinese, unlike English, does not have dedicated wh-words; the element *sheme* in (22b) is actually an indefinite which is also found in a number of contexts, such as yes/no questions, negated clauses, etc. (cf. Aoun & Li 1993). The interpretation of *sheme* depends on the interpretation of the clause. Second, the question particle *ne* in (22b) is in complementary distribution with the yes/no particle *ma*:

(25) Qiaofong mai-le *sheme* ma
Qiaofong buy-asp what $Q_{y/n}$
'Did Qiaofong buy anything?'

As (25) shows, when *ma* is present the sentence is interpreted as a yes/no question and *sheme* has the reading of *anything* and not of a wh-element. Given the complementary distribution of these two particles, we can argue that wh-C in Chinese is also * (bearing also in mind that Chinese is C-final). However, it differs from English in that wh-C* is realized by means of Merge, that is, inserting the dedicated wh-particle *ne*. Since the wh-feature is spelled out by Merge, Move is pre-empted. This analysis derives Cheng's (1991:30) generalization that languages with dedicated wh-particles lack wh-XPs and wh-movement.

The final example in (22c) comes from Iraqi Arabic, which, like Chinese, does not show wh-movement, but, unlike Chinese (and like English), has a distinct class of wh-words. That is, the word *meno* can only be used as a wh-element. According to Ouhalla (1996) wh-words in Iraqi Arabic consist of the wh-part plus a pronominal clitic: *men-o* = 'who+him'. In that respect they crucially differ from their Chinese counterparts, which are simply indefinites bound by any compatible operator. Also, the Iraqi Arabic sentence does not make use of a dedicated wh-particle. This is because the wh-feature is morphologically realized on the relevant DP, once again in accordance with Cheng's (1991) generalization. On the basis of this pattern, we could argue that wh-C in Iraqi Arabic does not receive an overt realization.[3] We thus see that the three options of wh-C*Merge, wh-C*Move and wh-C are instantiated by Chinese, English

3. Iraqi Arabic shows optional fronting, as in (i) (Wahba 1991, Ouhalla 1996):

(i) *meno* Mona shaafat?
who Mona saw
'Who did Mona see?'

We will assume, following Ouhalla (1996) and Cheng (1991), that optional wh-fronting of this type is an instance of a reduced cleft construction. Thus the structure in (i) is not a counter-example to the analysis suggested in the text.

and Iraqi Arabic respectively. This kind of approach has the clear advantage of allowing us to capture a wider range of cross-linguistic variation in a more principled way than the standard formulation of the wh-parameter in terms of the presence versus absence of movement.

The above constructions are just an instance of how the notion of interface interpretability can be used to account for parametric variation. The crucial point is that features must receive an interface interpretation. Thus we predict that there can be no features that receive no interpretation at either interface. That is, we exclude the presence of -p, -l features. This class of features would correspond to Chomsky's (1995, 2000, 2001) covert uninterpretable features. Assuming that all features receive an interpretation, we are able to locate parametric variation in the lexicon and in particular to restrict it to the ±p property of functional heads. A further important implication of this system is that it predicts that all instances of movement are overt, that is, there is no covert movement (cf. also Brody 1995, 1997, Kayne 1998, among others). This has important implications for the structure of grammar, which we will not investigate further here (but see Chomsky 2000 for a recent discussion). At the same time this approach brings PF and LF closer, as the former can be used as an indication of the kinds of relations that are established at LF.

1.4 Conclusion

In the present chapter we have introduced the main ideas that we will assume. In particular, in section 1 we introduced the logical problem of language change, formulated within the Principles and Parameters framework. As we pointed out, language acquisition is the process of setting parameters, whereas language change is the result of changes in the parametric settings. This view of language change links it closely with language acquisition. As Lightfoot (1979) pointed out, changes arise when a population of learners converges on a grammar which is distinct from the grammar that creates the input to learning (the trigger experience, or cues, in the terminology introduced in 1.1). In other words, the final state of acquisition may not result in full convergence with the adult grammar. We suggested that this happens when the trigger for a particular parameter value is obscure or ambiguous. In this case, parameter setting is facilitated by the learning device which has a built-in preference for simpler representations. This then opens the way to a solution to the logical problem of language change.

In section 2 we focussed on the nature of functional categories and argued that they have a syntactic status, as they have an effect on the syntactic relations and are visible to syntactic operations. We also argued against an approach that

parameterizes the number of available functional heads cross-linguistically (the 'WYSIWYG' theories) or restricts the number of available functional heads to a considerable extent (Chomsky's (1995, 2000, 2001) approach). The view we will pursue in the present book argues for the availability of a number of functional heads.

Finally, in the last section we outlined the theory of parameterization that we will assume, following Roberts and Roussou (1999). The main idea is that there are only interpretable features. Interpretability holds for both interfaces, LF and PF. Features associated with functional heads are LF-interpretable, but may not be PF-interpretable. It is the latter property that gives rise to cross-linguistic variation. Thus a feature F may be left unrealized (i.e. not spelled out) or be realized in one of the following two ways: by Merge (lexical insertion) or Move (attracting another morpheme). Which option is chosen depends on what the lexicon makes available. In this system parametric variation arises with respect to which features are spelled out and how. In the following chapters we will show that this approach has important implications for syntactic changes, and in particular for grammaticalization, which can be viewed as change from the Move to the Merge option.

Having outlined the basic assumptions of our approach, we next turn to a more detailed presentation of the relevant data. The next three chapters are devoted to applying the ideas presented here to a range of case-studies in grammaticalization. We take each main functional domain in turn: the T system, the C system and the D system. Our focus in these chapters is empirical; in Chapter 5 we will return to a more detailed and empirically informed discussion of some of the issues raised here.

2 *T elements*

2.0 Introduction

The purpose of this chapter is to provide empirical evidence for the claim that grammaticalization involves reanalysis of functional categories. The central idea is that whenever grammaticalization takes place, the content of at least one functional category is reanalysed, in such a way that new morphophonological realizations of functional features are created. In the notation of Chapter 1, section 1.3, new cases of F^* develop for some feature F (usually, but not always, F^*_{Merge} is innovated – see below and Chapters 3 and 4 for empirical evidence). This can mean that a lexical item or class of lexical items is reanalysed as functional, or that one functional category develops into another. We will see cases of both kinds in what follows. Crucially, our approach to grammaticalization implies that it is not a structural change: functional structure is present both before and after grammaticalization takes place; what changes is the way the features associated with functional heads are realized. More precisely, assuming a universal hierarchy of functional heads, as mentioned in Chapter 1, section 1.2 (see also Cinque 1999), the change involves the overt realization of these heads.

The chapter is organised as follows: section 2.1 deals with the grammaticalization of V elements to T markers, focussing on the development of modals in the history of English. This has been treated as a typical case of grammaticalization whereby a lexical verb is reanalysed to an auxiliary element. Section 2.2 discusses the development of the Romance futures from the infinitive + *habeo* construction, as a case where a lexical verb becomes an auxiliary and is finally reanalysed to a verbal affix. Finally, section 2.3 deals with the development of the future particle *tha* in Greek from the volitional verb *thelo*, or more precisely the sequence *thelo* + *na V*. Although all these cases are very well-trodden ground, we show that our treatment of them provides support for our approach. To this end, we show that the principal generalization is that categorial reanalysis always involves reanalysis of movement. We then consider a

theoretical generalization that follows from the empirical one: is it possible that grammaticalization, as reanalysis of movement, is isomorphic to movement? This idea would impose a strong restriction on what grammaticalization can be. By looking at the relations among functional categories, we observe two things: (i) that the diachronic movement of a given morpheme, possibly tracked over many centuries through successive reanalyses, is always 'upwards' in the structural hierarchy of functional categories (here Cinque's 1999 work becomes particularly relevant); (ii) that much of the allegedly continuous or cline-like nature of grammaticalization is due to multiple 'lexical splits'; as we will show, the different readings attributed to a single lexical item correspond to different positions in which it may be merged in the clause structure (see Poletto & Benincà 1997 and Simpson and Wu 2001 on this). We will also suggest a way in which it is possible, using the universal base proposed in Kayne (1994), to predict that new affixal material can only arise from head-movement constructions. Throughout this chapter and the following two, we largely leave aside questions of semantics and phonology – these will be dealt with to a greater or lesser extent in Chapter 5. Our goal here (and in Chapters 3 and 4) is to establish a clear set of empirically well-founded generalizations regarding the syntax of grammaticalization. Once this is clear, we can tackle the wider issues in Chapter 5, beginning with the explanation of grammaticalization as a syntactic change in terms of the assumptions put forward in Chapter 1, section 1.1.

2.1 From verb to auxiliary: the development of English modals

The well-known development of the English modal auxiliaries is a fairly clear case of grammaticalization in which what were once fully verbal elements underwent a category change and became auxiliaries. The basic evidence that modals are syntactically distinct from main verbs in Modern English (NE) is very well known, and we recapitulate it in (1):

(1) a. Modals lack non-finite forms:
*To can swim is useful.
b. Modals cannot be iterated:[1]
*He shall must do it.

1. Except in Scots, certain dialects of Northern England, and Southern US dialects, where double and perhaps triple modal constructions can be found (Brown 1992, Roberts 1993a:333, n. 3, and references given there). Cinque (1999:54, 78f.) suggests that sequences of modals fit into his clausal hierarchy. On the other hand, Battistella's (1991) evidence that the first modal in a sequence such as *He might could do it* is 'spurious' and may be an adverb is problematic.

c. Modals lack complements of all types (except bare infinitives):
   *I shall you a penny.
d. Modals are in complementary distribution with *do*-support and always precede *not*:
   *I don't can speak Chinese.
   *Do you can speak Chinese?
   *I not can speak Chinese.
e. Modals always move to C in inversion contexts (cf. (14) of Ch. 1):
   *How many languages (do) you can speak?
f. Modals, unlike main verbs, can license VP fronting (and also VP ellipsis, as in (10c) of Ch. 1):
   Win the election, I thought she would (*win) —.
g. Modals, unlike main verbs, can phonologically contract:
   We can fish. — ambiguous ('we are able to fish' or 'we put fish in cans')
   We c'n (/kən/) fish. — unambiguous (only 'we are able to fish').

In all these respects, modals are distinct from main verbs, which have non-finite forms, allow iteration (via clausal complementation), have a variety of complements (as a matter of selection/subcategorization), cannot precede clausal *not* or invert (but instead require *do*-support in the relevant contexts if no other auxiliary is present), cannot license VP fronting and cannot contract. It is worth clarifying at this stage that not all verbs with a modal reading exhibit the properties in (1). The verb *ought* is a clear example, as despite its modal character, it syntactically behaves like a lexical verb in some varieties (e.g. *I ought to go, I didn't ought to go*).

The properties of NE modals can be accounted for by merging them in the verbal functional system, in a position inaccessible to lexical verbs in NE (but accessible to other auxiliaries *do, have* and *be*), since main verbs do not raise into the functional system in NE (see Roberts 1985, Pollock 1989, and below on this point). For the moment, let us call this position T, and assume that T is the only functional category between C and VP. If we say that modals are members of T, then we may expect them to be sensitive to particular properties involving T (or the C-T relation), such as finiteness – hence the finiteness restriction is naturally stated. The lack of iteration could be accounted for in terms of the uniqueness of T: since there is just one T present, there can only be one modal in each clause. However, the availability of multiple-modal data like that mentioned in note 1 suggests that the uniqueness of T is not sufficient

Roberts (1993a:317), citing Plank (1984) (who in turn cites Ščur 1968), points out examples from Leicestershire English and Scots English where root modals retain non-finite forms. This may be the same fact as that discussed by Brown, to the extent that, where the first modal is a true modal, the second modal must be non-finite for a sequence to be possible.

to predict non-iteration. Instead it should be handled in the same way as the lack of non-finite forms: since modals always require a following bare infinitive and themselves have no infinitive forms, they cannot iterate. This is a desirable result as it allows us to have more than one position for modals and predict the availability of multiple-modal sequences for those modals only that have an infinitival form. We will come back to this point shortly.

At earlier stages of the language, prior to approximately the sixteenth century, none of the above properties characterized modals as a class distinct from lexical verbs, although Warner (1993:111f.) suggests that even in Old English (OE) the ancestors of some modals and *be* may have been able to license VP ellipsis. The following examples illustrate the lack of the relevant distinctions in Middle English (ME). Examples (2a–c) illustrate this point with modals, and (3a–b) with main verbs; this is the best way to indicate the properties that have been lost as the two classes have become distinct (we leave VP fronting and auxiliary reduction aside – see Plank 1984 on the former and Warner 1993:207–208 on the latter):

(2) a. *Non-finite modal*:
but it sufficeth too hem **to kunne** her *Pater Noster*, . . .
but it suffices to them to know their *Pater Noster*, . . .
(?c1425 (?c1400) *Loll. Serm.* 2.325; Denison 1993:310)

b. *Iteration of modals*:
Who this booke **shall wylle** lerne . . .
He-who this book shall wish learn . . .
'He who wishes to master this book.'
(c1483 (?a1480) Caxton, *Dialogues* 3.37; Denison *ibid*.)

c. *Complementation*:
euerych bakere of þe town . . . **shal to the þe clerke of þe town a penny**
every baker of the town . . . owes to the clerk of the town a penny
(a1400: Usages of Winchester (Engeroff), p. 64; Visser 1963–1973, §549; Roberts 1993a:313)

(3) a. *Main verbs preceding 'not'*:
if I **gave not** this accompt to you
if I gave not (=didn't give) this account to you
(1557: J. Cheke, Letter to Hoby; Görlach 1991:223, Roberts 1999:290)

b. *Main verb inversion*:
How **cam'st** thou hither?
How camest thou (did you come) here?
(1594: Shakespeare, *Richard III*; Roberts *ibid*.)

Both Lightfoot (1979) and Warner (1993:100–102) argue that the ancestors of the modern modals, the 'pre-modals' in Lightfoot's terms, were main verbs in OE and ME, although most of them were members of a particular morphological

class, the preterit-present verbs. This class, which in addition to the pre-modals included a small number of now-obsolete items (see Warner (1993:140–144) for detailed discussion and illustration), has present forms which derive historically from an Indo-European perfect form. As Lightfoot (1979) pointed out, the consequences of this are (a) that there was never a distinct third singular ending *-(e)th* or *-(e)s* (for example, the 1sg and 3sg OE forms of 'shall' are *sceal*), and (b) that the past tense was highly irregular. Lightfoot and Warner both suggest that these morphological peculiarities played a role in singling out the pre-modals as a subclass.

Whatever other complements they may have had at earlier stages, modals were able to take infinitival complements at all times, although in this respect too they may have been unusual, since, with the exception of *agan/ought*, they are rarely found with *to*-infinitives – see Warner (1993:136–139) for discussion and mention of one or two apparent ME exceptions. We take infinitives to be at least TPs: since finiteness is a property of T, this element must be present in order to define a clause as non-finite (we assume that the presence of VP is uncontroversial). Now, as shown by Roberts (1985, 1993a:246–255), earlier English (until at least the sixteenth century) had productive V-to-T raising in finite clauses. This is clearly shown by examples like (3d) where V precedes clausal negation, and (4) where the verb and its nominal direct object are separated by an adverb or a floating quantifier (see Pollock 1989 for discussion and justification of these tests):

(4) a. The Turkes . . . **made anone redy** a grete ordonnaunce.
The Turks . . . made soon (=soon prepared) a great ordnance.
(c1482: Kaye, *The Delectable Newsse of the Glorious Victorye of the Rhodyans agaynest the Turkes*; Gray 1985:23; Roberts 1993a:253)
b. In doleful wise they ended both their days.
(1589: Marlowe *The Jew of Malta* III, iii, 21; Roberts *ibid*.)

If infinitival complements contain T and main clauses feature V-to-T movement, then simple pre-sixteenth-century examples containing a pre-modal and a bare-infinitive complement like (5) must have had a biclausal structure like (6):[2]

2. The structure in (6) glosses over a number of complexities that are not directly relevant here. In particular, we treat the adverb *sone* as adjoined to TP. In fact, it is much more likely to be in a topic position in the CP system (Cinque (1999:96f.) argues that adverbs like *soon* occupy the Specifier of an AspectP which is rather low in the clause structure, certainly lower than the position occupied by epistemic modals like 'may' in (5a), hence the adverb must have been topicalized in this example). The structure in (6) does not include any of the elaborated functional structure proposed by Cinque, collapsing it all as TP in both clauses. Moreover, we gloss over the question of the nature and presence of a CP layer in the lower clause, the VP-internal subject hypothesis and the nature of the empty category in the subject position of the lower clause. None of these points affects the present discussion.

(5) a. Sone hit mæi ilimpen
soon it may happen
(a1225 (?a1200): Lay. *Brut* 2250; Denison 1993:299)
b. þou mai haue childer
You may have children
(a1425 (?a1350): *7 Sages* (2) 2843; Denison 1993:300)

(6) $[_{TP}$ Sone $[_{TP}$ hit mæi $[_{VP}$ $t_{mæi}$ $[_{TP}$ T $[_{VP}$ ilimpen$]]]]]$

Roberts (1993a:313–314) provides evidence that pre-modals in ME allowed both raising and control infinitives, that is, that the empty lower subject in a structure like (5) could be either a DP trace (raising) or PRO (control). (6) arguably illustrates raising, as expletives like *(h)it* are unable to participate in control relations. The clearest control examples involve dative experiencers in the main clause, since raising to an indirect-object position is impossible:

(7) a. Mee moste nedys been dampned for this
Me must needs (=I must) be damned for this
(1455: *Speculum Misericordie*, 251, Visser 1963–1973, §1715; Roberts 1985:38)
b. hwi mi ouh and hwi me scal iesu crist luuien
why me ought and why me shall J. C. love
(*Ancr. R.* (EETS 1952) 6, 23, Visser 1963–1973, §1712; Roberts 1993a:314)

There is some reason to think that pre-modals were restructuring verbs, in the sense of Rizzi's (1982) analysis of a class of Italian modal and aspectual verbs, that is, verbs which obligatorily or optionally triggered clause-union with their infinitival complement (see also Aissen & Perlmutter 1983). First, it might be that the upstairs case of the experiencer was determined by the downstairs verb: Warner (1993:122f.), following Denison (1990), discusses some possible instances, although his evidence seems rather equivocal. Second, van Kemenade (1993) gives evidence that OE pre-modals triggered verb (projection) raising, a process of reordering in the verbal cluster characteristic of verb-final West Germanic varieties which, since the earliest analyses (Evers 1975), has been related to restructuring (see also Rutten 1991). Third, it is known that verb raising triggers are incompatible with various particles in the complement (*om* in Dutch, both *um* and *zu* in German); in this light, the fact that pre-modals consistently select a bare, *to*-less infinitival may fall into place. Fourth, they exhibit long object-shift of negative objects (Beukema & van der Wurff 2000). We will not take a definite view on whether the pre-modals were restructuring verbs, although this seems to be likely. We will return below to one potentially important consequence of this idea.

The structure in (6) became a monoclausal structure like (8) when the modals were reanalysed:

(8) $[_{TP}$ Soon $[_{TP}$ it may $[_{VP}$ happen]]]

Roberts (1993a:310f.) dates the reanalysis from (6) to (8) as taking place early in the sixteenth century; Warner (1993:198f.) gives c1500 as the time of the loss of non-finite forms of pre-modals, an important consequence of this change, as we will see below. As argued in Chapter 1, this change is clearly favoured by the conservative nature of the learner as it involves the elimination of a movement operation: V-to-T movement of the modal. A consequence of the loss of this movement is that there is no longer evidence for a biclausal structure – only one instance of T is triggered after reanalysis (and this is now T^*_{Merge}, so the element merged in T provides it with a realization). In this way, the loss of movement leads to grammaticalization (modals are reanalysed from V to T), and the grammaticalization entails a reanalysis of the earlier biclausal structure in (6) as the monoclausal structure in (8). The root cause of this latter reanalysis is the loss of movement. So we do not need to ask what caused the change. What we need to see is what prevented the change from taking place sooner. In other words, what was present in the trigger experience of acquirers until c1500 that provided robust evidence (a robust cue, in the terminology of Lightfoot 1998) for treating the modals as verbs and/or for treating the structure of (5) as biclausal? We're looking for a cue for two Ts (biclausal structure) and/or for the verbal nature of the modals, a piece of evidence that was somehow lost or obscured around 1500.

Following Roberts (1993a), we propose that the causal factor was morphological. Indeed Lightfoot (1979) and Warner (1993) point out that the pre-modals as a subclass were 'opaque' as main verbs in a variety of respects, but the factors contributing to this opacity go back to OE and did not alter significantly around 1500 – see Warner (1993:198ff.) for discussion, and some of the points made below. By or shortly after 1500, the former infinitive ending *-e(n)* had disappeared (see Roberts 1993a:261). At the same time, *for NP to VP* constructions appear (Lightfoot 1979:186ff.). We can analyse this as a change in the parametric property of T. Earlier T attracted V with the relevant morphology (T^*_{Move}). Assuming standardly that *for NP to VP* constructions show that *to* must be in T (cf. also Pollock 1989), they are evidence for T^*_{Merge} in infinitival contexts (but see Chapter 3, section 3.3, for an alternative view, which does not affect the present discussion). Now, as long as infinitives occurred with the *-e(n)* ending, there was clear evidence for the lower T: this ending could not instantiate the higher T as modals were tensed, and so they instantiated the higher one.

Examples like the following were thus unambiguous evidence for two Ts, and therefore for a biclausal structure:

(9) nat can we se**en** . . .
Not can we see
'we cannot see'
(c1400: Hoccleve *The Letter of Cupid* 299, Gray 1985:49; Roberts 1993a:261)

So once the infinitival ending was lost, (6) was reanalysed as (8), thanks to the fact that there is no further evidence for the lower T, and hence no evidence for two Ts. This in turn means that there is no evidence for a biclausal structure, and hence for V-to-T movement. The crucial point to notice here is that while prior to the loss of the infinitival ending modals could be monoclausal (due to restructuring), after the loss of *-en* they had to be, that is, they became incompatible with a biclausal structure. This analysis has the advantage of accounting for the peculiar status of NE modals: NE is the only Germanic language with such a syntactically defined class, and it is the only Germanic language lacking an infinitival ending. The latter fact also correlates with the existence of the *for NP to VP* construction in NE but nowhere else in Germanic, and arguably with the non-existence of a particular kind of causative in NE (see Roberts 1993a:321).

Once the modals were grammaticalized as elements of T their NE properties emerge. In particular, they lose their argument structure,[3] and therefore the possibility of any form of structural complement other than a VP (which of course looks just like a bare infinitive), they lose their non-finite forms, and they take on complementary distribution with supporting *do* (which also underwent the same reanalysis; Denison 1985, Roberts 1993a:295, Warner 1993:201). It appears that these changes take place early in the sixteenth century (cf. Warner (1993:198ff.) for a thorough discussion). However, the picture is complicated somewhat by the existence of lexical splits whereby a given pre-modal divides into a grammaticalized element (member of T) and a full verb (member of V). For example, Warner (1993:202) describes the development of *can* as follows: 'In CAN, the sense "learn" becomes established in the spelling *con* as a distinct verb taking regular inflections.' We thus have can_T, a modal without argument structure and non-finite forms, and con_V a transitive verb meaning 'learn' with a full range of regular forms. In Standard English, *need* and *dare* survive to the

3. On the possibility of developing argument structure see Vincent's (1999) discussion on prepositions.

present as T-V doublets;[4] Ščur (1968) (cited in Plank 1984) points out dialectal examples where *can* and *will* survive as lexical verbs (see note 1).

Later in the sixteenth century (or possibly later still – see Tieken-Boon van Ostade 1987, Warner 1997:382–383, Lightfoot 1999:163), V-to-T movement of main verbs was lost (Roberts 1985, 1993a:246ff., 1999), which meant that only auxiliaries, that is, members of T, could precede clausal negation and move to C in interrogatives and other inversion contexts. This created the situation we observe in English today: a rigid separation exists between lexical verbs and modal auxiliaries. So we see how modals may have been reanalysed in the early sixteenth century from being verbs which, like all other finite verbs in the language at that time, moved to T to being merged in T. The crucial factor that led to this reanalysis was the loss of infinitival morphology, and the change in the modals took place at almost the same time as (or perhaps a generation later than) this.[5]

However, if we take into account a wider range of data, and the possibility of a richer functional structure, the picture becomes more complex and more intriguing. First, Warner (1983, 1993) gives evidence that at least some pre-modals may have started 'leaking' into the functional domain from much earlier than the sixteenth century. He shows that OE *mot, dearr* and *sceal* do not have attested non-finite forms (see his 1993, Table 6.3, p. 145). Warner goes on (p. 147) to formulate the following generalization for ME (his (3)):

(10) Preterit-present verbs subcategorized for the plain infinitive which denote necessity, obligation and related notions of futurity are finite only.

The generalization covers *mot, shal, þarf, mun* and *dar*, the core deontic modals of ME.

Taking our cue from Benincà and Poletto's (1997) important work on the Italian modal *bisogna* (be necessary), which we discuss in more detail below, we propose to account for Warner's generalization, and the general 'leakage' of pre-modals into the functional system which he documents, in terms of

4. With the added complication that modal *need* is a polarity item in present-day English:

 i. *John need do that.
 ii. John needn't do that.

 Also, *need* must be interpreted inside the scope of negation in (ii).

5. Warner (1993:199) makes a useful comparison of the incidence of non-finite *can* and *may* in Caxton (1422–1491) and More (1478–1535), the latter making markedly less use of such forms than the former. It would be revealing for the account of the reanalysis of the modals offered in the text to check the incidence of infinitival *-e(n)* in Caxton.

Cinque's (1999) proposals for the functional structure of the clause. Cinque (1999:106) proposes a structure featuring some thirty functional categories, ten of which are mood or modal heads. The substructure which concerns us here is the following:[6]

(11) $\mathrm{Mod}_{\mathrm{Epistemic}}$ T(Past) T(Future) $\mathrm{Mood}_{\mathrm{Irrealis}}$ $\mathrm{Mod}_{\mathrm{Necessity}}$ $\mathrm{Mod}_{\mathrm{Possibility}}$ ... $\mathrm{Mod}_{\mathrm{Root}}$

Suppose that the OE and ME modals in question were, in the relevant interpretations (i.e. 'necessity, obligation and related notions of futurity' as in (10)), able to be merged directly into the relevant functional heads. If we take the basic difference between lexical verbs and verbal functional heads to be the possession of argument structure, then we can think that merger directly into the functional system correlates with the absence of argument structure. A complication for this view stems from the fact that dynamic modals (or root modals) may be associated with (possibly defective) argument structure (see Jackendoff 1972, Zubizarreta 1982). If we want to follow Cinque's (1999) system we have to assume that 'necessity, obligation and related notions of futurity', in Warner's formulation, are notions that can be structurally expressed either through argument structure or by scopal properties of functional heads (we will elaborate on this below). The latter option is always preferred as it creates simpler structures (only one functional hierarchy rather than two). This is why the ME pre-modals that fall under (10) were able to be grammaticalized, in these interpretations, early. From the Mood/Mod position they moved higher, at least as far as the highest T, just as all finite verbs did at these periods (this assumption is unchanged from the discussion above). So this is grammaticalization of these modals on these interpretations, and is motivated exactly like the general grammaticalization of the modals described above: merging a modal higher in the structure economizes on movement steps, and so is preferred by the learner.

However, merging these modals directly rather 'high' in the functional structure meant that certain properties that had to be licensed (or checked) by lower functional heads could not be licensed. In particular, below the lowest modal head is a series of aspectual heads (cf. Cinque 1999, Chapter 2). It is plausible to suppose that participial morphology is licensed there. In this way, then, we can explain the absence of participial forms of the relevant modals; our explanation exactly parallels that offered by Benincà and Poletto (1997) for the morphological defectivity of Italian *bisogna*. We must also assume, following Benincà

6. Cinque actually labels $\mathrm{Mod}_{\mathrm{Root}}$ as $\mathrm{Mod}_{\mathrm{Volition}}$, but elsewhere (p. 90), he provides evidence for 'the postulation of three distinct root modal projections, in the order: $\mathrm{Mod}_{\mathrm{Volition}} > \mathrm{Mod}_{\mathrm{Obligation}} > \mathrm{Mod}_{\mathrm{Ability/Permission}}$'. For our purposes, we can conflate these as in (11).

and Poletto, that infinitival morphology is checked lower in the structure than the modal heads. We will come back to the structure in (11) and modify it accordingly shortly. For the time being it suffices to show that the different interpretations of modals can be taken to correspond to different (functional) heads in the clause structure.

Furthermore, Warner shows that epistemic interpretations of pre-modals emerge in ME (see also Lightfoot 1979, Chapter 1; Roberts 1985). We can interpret this as a further reanalysis of (some) pre-modals as being merged in the $\text{Mood}_{\text{Epistemic}}$ position in (11). This idea has the consequence that, if epistemic modals are merged higher than T(Past), they are unable to have the features associated with this position. We take this to mean that they are opaque to the usual past/non-past relation, a feature of the developing epistemic modals which has often been commented on (see Lightfoot 1979, Chapter 1; Roberts 1985; Warner 1993:148–150).

The idea that certain modals may have been directly merged in the functional structure is also consistent with the sporadic evidence, briefly alluded to above, that they may have been restructuring verbs. Cinque (2001) has argued that Italian clause-union constructions are indeed monoclausal, with the restructuring verbs actually merged in the functional structure. Put simply, Cinque's (2001) proposal is that restructuring verbs are functional heads. If so, then the indications that pre-modals may have been restructuring verbs are consistent with the proposal that they were merged directly into the functional system.

The tendency for certain modals to be directly merged in the relevant functional positions in (11) became categorical after the loss of infinitival morphology for the reasons given above. Note also that the argument given above that infinitival morphology provided a crucial cue for a biclausal structure is unaffected by the adoption of an elaborated clause structure, as long as we assume that infinitival morphology indicates the presence of a functional structure. In cases like those just described, the interpretation of the modal allows for the postulation of a monoclausal structure with the modal – necessarily finite – higher than the position of infinitive morphology. On other interpretations, in particular those where the modal had argument structure, the infinitival morphology provided the cue for a biclausal structure, exactly as described above. As we also mentioned above, the full syntactic effects of the reanalysis of modals were not apparent until after the loss of V movement into the functional system (which we can still tentatively identify as movement to T(Past)).

The above treatment of English modals has interesting parallels in other languages. What we observe in many languages is evidence for grammaticalization of individual modals, although the existence of a morphosyntactically distinct

class of the NE type is not attested elsewhere in Germanic or Romance. The reason for this, as we mentioned above, is that all the Germanic and Romance languages have infinitival morphology and so the reanalysis of (6) as (8) was not possible. This extends to the Mainland Scandinavian languages, which, as is well known, lack V-movement in non-V2 clauses (see Platzack 1987, Vikner 1995). As Benincà and Poletto (1997) show, the Italian deontic modal *bisogna* has some properties that are reminiscent of those of the English (pre-)modals: it lacks non-finite forms, personal forms and a range of tenses (see also the discussion on Greek *thelo* in section 1.3).[7] It also fails to host clitics and cannot have a subject (Denison (1990) and Warner (1993) argue that this last is also true of some English pre-modals). Benincà and Poletto (1997) also show that one version of *tocar* (literally 'touch') in the Veneto dialects of Padua and Venice is very similar to Standard Italian *bisogna*. Vikner (1988) shows that in Danish, epistemic modals cannot be non-finite, and van Kemenade (1985) argues the same for Dutch (see also Roussou (1999) for the non-availability of +past tense forms on epistemic modals in Greek). In the next section, we shall see some reason to think that Late Latin *habere* was also similar. If the above proposals are correct, all of these are instances of the grammaticalization of certain modal verbs on certain interpretations.[8] The full categorial split between modals and main verbs that we observe in English, from the sixteenth century on, is not found in these languages because infinitival morphology is retained.

Having presented the properties of English modals, their reanalysis, and the triggers for the change under consideration, let us go back to the structure in (11). In Cinque's (1999, 2001) terms, there is a distinct functional head for each reading associated with modal verbs. According to his analysis, epistemic modals should occur higher up in the clause than root modals. The clear advantage of

7. It has been pointed out to us that not all native speakers share the judgements provided by Benincà and Poletto (1997), and therefore the relevant restriction must be a temporal/aspectual one. Notice that if this observation is correct, it is still consistent with the present analysis, given that aspectual positions appear low in the functional hierarchy.
8. It may seem strange to propose that epistemic modals in Danish occupy a very high functional position like $Mod_{Epistemic}$ when the evidence is that all verbs, including modals, occupy just two positions in this language: the V2 position (presumably C) and what appears to be the base V position (see Vikner 1995 and the references given there). The problem really concerns associating the epistemic interpretation with the low position. This problem is just an instance of the general problem that arises in Mainland Scandinavian languages (and to some extent in English) of associating functional information (at the very least Tense) with the *in-situ* verb, and as such is not created by assuming the Cinque (1999, 2001) hierarchy. Whatever technical device we postulate to associate Tense with the *in-situ* verb (affix-hopping, chain-formation, LF movement, etc.) can be exploited to associate an epistemic modal with its functional position. See also the discussion that follows in the text.

his analysis is that it allows a single lexical item to receive different interpretations by simply assuming different positions in the functional structure. 'Lexical splits', then, can be simply derived syntactically, at least in the cases under consideration here. At the same time, his system turns out to be too powerful as there seems to be no limit on the number of functional heads postulated: in principle there could be a different head for each possible interpretation. There are cases though (as we will see in section 1.3 as well), where certain readings derive as a combination of other properties in the clause structure. Consider, for example, epistemic versus dynamic modals and the potential problem raised above, namely that the latter seem to have some sort of argument structure. In Cinque's (1999) system, though, the positions where arguments are structurally licensed are not represented. On this basis, it is not very obvious how certain interpretations interact with the presence versus absence of argument structure. Furthermore, as we saw in our discussion of English modals and we will see in the following two sections as well, a crucial factor in the reanalysis is the loss of agreement marking. If agreement marking correlates with argument structure, then we see once more that Cinque's structure fails to capture the correlation between the loss of inflectional properties and categorial reanalysis.

Despite the above problems we would like to maintain the spirit of Cinque's (1999, 2001) approach and maintain that (a) there is a structural correlation between a lexical item and the interpretation it receives, and (b) this correlation targets different heads in the clausal structure. However, it is possible to express these points by adopting a more conservative structure, such as the one in (12):

(12) $[_{TP}$ T $[_{vP}$ v $[_{VP}$ V]]]

According to standard assumptions, lexical verbs are merged in V and they move to v and T (although this is subject to parametric variation – see Pollock (1989)). The VP shell in (12) also corresponds to the expression of the thematic structure, as argued by Hale and Keyser (1993). The lower VP determines the thematic role typically associated with objects, while the higher one determines that of subjects. Suppose, then, that dynamic modals, which seem to be a cross between lexical verbs and modals, are merged not in V but in v. If this is correct, we predict that they can participate in the determination of argument structure, and more precisely that of the subject. This is consistent with the fact that these verbs are subject oriented. This alternative approach also captures Zubizarreta's (1982) claim that these verbs assign 'adjunct' theta-roles. On the other hand, epistemic modals, which have no argument structure at all, are directly merged in T.

The tripartite system in (12) then correctly predicts that we can distinguish three types of verbs: epistemic modals, dynamic modals and lexical verbs. It

furthermore provides a clear correlation between the different positions and the absence or presence of argument structure. In languages like English where the lexical V can appear in the bare form, we predict that the structure in (12) straightforwardly captures the monoclausal structure of the modal+V sequence. We will see how this structure can account for the other changes discussed in the following two sections. The reanalysis of modals can be seen as involving two steps: (i) direct merge at v (with subsequent movement to T), and (ii) direct merge at T. When the modal is merged in v then it is still able to participate in argument structure and show T distinctions, and at the same time it is not regarded as a lexical V. If, on the other hand, the modal is merged in T directly, then it has no argument structure and doesn't show regular tense distinctions (it's just finite), yielding the interpretation typical of epistemic modals.

In this section, we have considered the development of the English modals, in the light of three independent changes. The first involves the reanalysis of some modals, and is attested in various languages as mentioned in the preceding paragraph. The second involves the loss of the infinitival morphology *-en* in English, which led to reanalysis of all modals. We proposed that the categorial split that took place early in the sixteenth century was triggered by the loss of infinitival morphology. This is also why this split is not found in other closely related languages. The third corresponds to the loss of V-to-T movement, which in combination with the loss of infinitival morphology gave rise to reanalysis of biclausal structures with modals to monoclausal ones. Notice that the last two are specific to English. Loss of V raising is found in Scandinavian as well, but not in association with loss of infinitival endings. It is the combination of all these three factors that led to the creation of a distinct class of modals in English. We have shown that this involved categorial reanalysis of the pre-modals as exponents of the T head (or v) in the functional system; in this respect, this change corresponds to our general characterization of grammaticalization as loss of movement.

2.2 Romance futures

Another very well-known case of grammaticalization is the development of the future and conditional tenses of most of the modern Romance languages (cf. Fleischman 1982, Pinkster 1987, Hopper & Traugott 1993:42–44, Roberts 1993b).[9] Traditional manuals of Romance philology, such as Bourciez (1967), Tekavčić (1980), describe these forms as originating in a periphrastic construction in Latin formed by an infinitive followed by *habere* (to have). For example,

9. In fact, not all of them, since southern Italian dialects and Sardinian do not have future tenses.

the future tense of nearly all Modern French verbs quite transparently shows this development. Compare the endings attached to the infinitive of *chanter* below, forming the future, with the present tense of *avoir* (to have):

(13) Future: chanter-*ai*, chanter-*as*, chanter-*a*, chanter-*ons*, chanter-*ez*, chanter-*ont*
avoir: ai, as, a, avons, avez, ont

The full lexical Latin verb *habere* was reanalysed as the future/conditional ending in the modern Romance languages in three stages. First, *habere* was reanalysed as a future auxiliary comparable to *will* in Modern English (cf. Fleischman 1982:60–66 on the relation between conditional and future in connection with *habeo*). This was a change from no realization of the future/conditional by a functional head to realization by an overt free morpheme, that is, Move > Merge (following Benveniste (1968), we take it that the Classical Latin future forms, e.g. *amabo* 'I will love' and *dicam* 'I will say', were being replaced by the periphrastic ones. One expects the synthetic forms to survive in later texts as well; cf. the discussion regarding the Greek future in the following section). The change affecting *habere* is extremely similar to the one involving English modals discussed in the previous section, except that it apparently involved only *habere*.[10] Second, the auxiliary *habere*, an autonomous word, was reanalysed as a syntactic affix. This is presumably a change from Merge to Move+Merge. The first change arguably took place in the third century, according to Benveniste (1968) (see below). The second change may be a direct reflex of the first (Fleischman 1982). The third change was the reanalysis of the syntactic affix as a lexical affix, that is, a feature of V, and the corresponding reintroduction of V-to-T movement in futures and conditionals. This change took place almost immediately after the earlier ones in French (Languedoïl), but slightly later in Occitan, Catalan and Northern Italian. It took place considerably later in Ibero-Romance (outside Catalan), as the evidence from clitic placement (which we will briefly go into) shows, and in fact may not have yet happened in conservative varieties of contemporary European Portuguese.

10. Actually, there is sporadic evidence for a similar reanalysis of *debere* (to have to), which is the future auxiliary in Logudorese Sardinian, and *velle* (to want), which became the future auxiliary of Rumanian (Fleischman 1982:114). Presumably, these changes took place at different times and in different places in the Latin/Romance-speaking area. The case of *debeo* is more interesting; presumably this verb comes under (17) in virtue of its form (2nd conjugation) and its meaning (stative, meaning 'to owe'). The development in Logudorese Sardinian is therefore expected, although we have nothing to say about why this development was not more widespread. The development of *velle* may be due to Greek influence (see next section), or may fall under (17) below since in Vulgar Latin *velle* became *volere* by analogy (J. C. Smith, personal communication).

The three changes can be roughly schematized as in (14), illustrated with the Italian future form *amerò* (cf. Roberts 1993b):

(14) a. [$_{TP}$[$_{VP}$ [$_{XP}$ amare] t_{habeo} [$_{T}$ habeo]]] > [$_{TP}$ [$_{XP}$ amare] [$_{T}$ habeo]]
b. [$_{TP}$ [$_{XP}$ amare] [$_{T}$ habeo]] > [$_{TP}$ [$_{XP}$ t_{infin}] [$_{T}$ amar + aio]]
c. [$_{TP}$ [$_{T}$ amar + aio] [$_{VP}$ t_{infin}]] > [$_{TP}$ [$_{T}$ amer+ò] [$_{VP}$ t_{V+fut}]]

We observe that, with the single difference of the relative order of T and its complement, the reanalysis shown in (14a) is the same as that relating (6) and (8) in the previous section – on the question of 'T-final' order in the light of Kayne (1994), see below. This is a further case, comparable to the ME modals and Italian *bisogna*, of 'leakage' of verbs with certain interpretations into the functional system. We can sharpen the parallel with the cases discussed in the previous section by deducing a certain morphological defectivity of the reanalysed *habere*. Although this verb had the full range of Latin tenses, voices and moods, only the present and imperfect (Gallo- and Ibero-Romance) or perfect (Italian) indicative active forms were reanalysed as futures and conditionals respectively. Thus we do not find future participles based on a Latin infinitive plus non-finite form of *habere* (and this despite the fact that Classical Latin had future participles, which, like the Latin future tenses, are entirely lost in Romance).[11] The absence of future participles and the like in Romance suggests that only a relatively small number of finite forms of *habere* were reanalysed. In other words, reanalysed *habere* was morphologically defective in a way which is directly comparable to the ME pre-modals discussed by Warner (1983, 1993) and *bisogna* as discussed by Benincà and Poletto (1997) (see previous section).

In Classical Latin, *habere* was a full verb with the core meaning 'to own' or 'to possess'. The following is an example of *habere* with a complement containing an infinitive where it is clear that *habere* is functioning as a verb of possession:

(15) De re publica nihil habeo ad te scribere.
Of thing public nothing I-have to you to-write
'I have nothing to write to you about the republic.' (Cicero; cited in Tekavčić 1980)

11. There seem to be some counter-examples to the claim that we don't find non-finite forms of *habere* with the infinitive. Fleischman (1982:55) gives the following example:

(i) tamquam ovis ad victimam adduci habens (Tertullian)
'like a lamb about to be taken to slaughter'

In this construction *habere* occurs with the passive infinitive *adduci*. As Fleischman points out this construction is used in the absence of a future passive participle. Crucially, though, the use of the participial auxiliary never gained much ground (Bassols 1948:305, cited in Fleischman 1982:55). We should perhaps relax our statement in the text, and assume that at some point in its development *habeo* could have non-finite forms, which it then lost.

In this kind of example, there is no reason to treat *habere* any differently from a standard transitive verb: it is a V with a DP complement (in the above example, this DP has a fairly complex internal structure) to which it assigns a theta-role. According to Sihler (1995:497) *habeo* formed an agentive-stative doublet with *capio* (take), cf. *pendo* (suspend) versus *pendeo* (I am hanging). We can interpret this to mean that *habeo* had an argument structure, although presumably one lacking an Agent thematic role. (Sihler (1995:531) points out that the stative verbs in these doublets were all second conjugation; on the potential significance of this observation, see below.)

The reanalysis of future/conditional *habere* gave rise to a 'lexical split', in that reflexes of *habere* in other contexts (essentially, where *habere* was not adjacent to an infinitive, see below) retain the possessive and related senses that are found in Classical Latin. This is true in Modern French and Italian, but possessive *habere* has been lost in contemporary Spanish and Portuguese. The reflexes of *habere* have also arguably been grammaticalized in other ways in other contexts: in existential constructions and in perfect tenses, although here again Portuguese has largely lost *habere*. Both possessive and perfect reflexes of *habere* have a full range of forms, including non-finite forms. Again, this indirectly points to an early morphological defectivity of future/conditional *habere*.

A further parallel with the ME pre-modals arises from observations made by Benveniste (1968). Benveniste clarifies a number of aspects of the developments in Late Latin. He points out that the periphrastic construction infinitive + *habere* originates with 'Christian writers and theologians starting with Tertullian', that is, early in the third century AD. The 'overwhelming majority of examples', according to Benveniste, indicate that the periphrasis involved a passive infinitive, as in the following (Benveniste 1968:90):

(16) in nationibus a quibus magis suscipi habebat.
among nations-abl by which-abl most to-be-accepted had
'Among nations by which the most was to be accepted.'

The periphrasis 'acts as the equivalent of the future passive participle' and 'served to indicate the predestination of an object to follow a certain course of events'. It seems clear that *habere* here has a (deontic) modal interpretation that essentially involves the notion of futurity. The 'thematic' interpretation of possession seems to be absent. In marking purely temporal content, *habere* is close to an auxiliary like Modern English *will*. In these constructions at least, then, *habere* had a defective argument structure from quite an early time (i.e. since it started being used as a modal). At this stage, it may be that *habere* could be merged under T in the structure in (12) (or $\text{Mod}_{\text{Necessity}}$ in terms of Cinque's (1999) substructure in (11)).

We can thus tentatively apply Warner's generalization for the ME pre-modals, given in (10), to *habere*, as follows:

(17) 2nd conjugation stative verbs subcategorized for an (passive) infinitive which denote necessity, obligation and related notions of futurity are finite only.

Since *habere* was the only second-conjugation stative to have the relevant semantic property, (17) singles out just this verb (*debeo* (owe) may have been another candidate, see note 10; other members of this class mentioned by Sihler (1995:531) include, in addition to those mentioned above, *video* (see), *taceo* (be silent), *sedeo* (be seated) and *iaceo* (lie down)). We can account for (17) exactly as we accounted for (10) in the previous section. If *habere* is inserted directly in T, it is unable to be licensed as non-finite, as already mentioned at the end of the previous section for English modals. Note that the generalization in (17) is not meant to explain the change that took place, but simply to show the parallelism with the English modals. The crucial point made by (10) and (17) is that a certain number of verbs form a group on the basis of their formal, and not their morphosemantic' properties.

Benveniste shows that between the third and the sixth century AD the periphrasis spread to a wider range of verbs and contexts: active intransitives and deponents. By the end of the Imperial period the periphrasis clearly had a straightforward future meaning (cf. Benveniste 1968, Bourciez 1967, Tekavčić 1980). The following example, from Tekavčić (1980:237), is a seventh-century case of clearly temporal *habere*:

(18) et quod sum, essere abetis
and that I-am, to-be habere-2pl
'And what I am, you will be.' (7th-century inscription)

The spelling has been Latinized in this example, and it is likely that it is somewhat distant from the contemporary pronunciation. The following is generally said to be the first example of the Romance synthetic future, and gives a clearer idea of the pronunciation:

(19) Iustinianus dicebat: 'Daras'.
Iustinianus said Give + habere + 2sg
'Iustinianus said: You will give.' (*Fredegario*, 7th century)

Here we see that the second singular of *habere* is reduced to *-as*. Tekavčić (1980:236) gives the forms of *habere* in this context as:

(20) *a(i)o, as, a(t), (av)emo, (av)ete(s), an(t)*

These forms, particularly the elimination of the stem *av-* in the first and second plural, indicate that future *habere* was aprosodic at this time. Whatever its phonological status, it seems clear that, by this time, *habere* was able to be merged in T.

As in the case of the English modals, we can see why the change in (14a) took place (we will discuss (14c), and why this change did **not** take place in English, directly). Considerations of complexity led the learner to select grammars that reduced the complexity of the representations that covered infinitive + *habere*. The older representation involved a V position in which *habere* was generated and a head-movement relation between *habere* and T, as shown in (14a) above. The innovative representation involved direct generation of *habere* in the functional system. With each reanalysis, a structure created by adjoining one head to another is eliminated. Again, as with the English modals, there is evidence for incremental reanalysis 'upwards' through the functional system. Of course, there are also significant differences between the English reanalysis discussed in the previous section and the Latin/Romance one. First, infinitive morphology was not lost in Latin/Romance (it still survives today). Second, *habere* became an affix, while the English modals remain morphologically free elements. We will now discuss these points in turn.

Regarding infinitival morphology, we mentioned in the previous section that the reanalysis of individual lexical verbs as functional heads restricted to finite forms and occupying 'high' functional positions is consistent with the retention of infinitival morphology. Indeed, this was exactly the situation in ME (and is the situation in contemporary Italian complements to *bisogna*). As we saw in the previous section, the loss of infinitival morphology in sixteenth-century English forced a split between auxiliaries and main verbs, but no such split has ever been forced in Latin or Romance, precisely because infinitival morphology has been retained in these languages.

The second point, namely the reduction of *habere* to an affix, requires us to take a closer account of Latin word order. Although Latin word order was rather free, there is a general consensus that the unmarked order was OV. This in turn implies that auxiliaries followed main verbs, following standard typological generalizations (see Greenberg 1966, Hawkins 1983, Croft 1990). In fact, we observe this order in relation to the infinitive and the auxiliary *habere* in examples such as (15)–(16), and (18)–(19) above. In order to account for similar orders in German, Cinque (1999:58), following Kayne (1994:141, n. 15), Zwart (1993:334f.) and Haegeman (1999), proposes that V may raise from VP and the remnant VP be fronted to the specifier of a functional head. In

line with these general ideas, we might propose a structure like the following for the relevant subparts of an example like (16):

(21) [[$_{VP}$ magis t$_V$] . . . [$_T$ [$_V$ suscipi] [$_T$ habebat]]]

Under this analysis, the head occupied by the auxiliary in fact has the Move+Merge option. We see that this option is characteristic of 'head-final' systems, as they are analysed in terms of Kayne's (1994) proposals. If it is true that $F^*_{Move+Merge}$ arises only in 'head-final' systems and only in this way, and if, as seems natural, this option is the principal means by which new affixes are created, then we can understand the general preference for suffixal morphology in the world's languages in terms of Kayne's proposal that adjunction is always to the left of the host.

In fact, there is an alternative way of capturing the V-final order in (21), while maintaining the results concerning 'head-final' systems. In particular, it is possible to argue that what occurs in T in (21) is actually the infinitive *suscipi*, while *habebat* occurs in a head adjacent to T, as shown in (21'):

(21') [[$_{VP}$ magis t$_V$] . . . [$_T$ suscipi] [$_v$ habebat]]

In terms of this analysis the VP-internal material, such as *magis*, undergoes remnant VP movement, while V moves to T, bypassing the auxiliary. Whether it is actually the VP that remnant-moves, or simply the DP only that scrambles to a position above T, it's actually not easy to tell and to some extent not relevant to our present discussion. What is relevant though is movement of the infinitive to T over the auxiliary in v. Notice that this latter kind of movement makes this construction similar to other cases of Long Head Movement (LHM), where movement of V crosses over the auxiliary (cf. Lema and Rivero 1991, Roberts 1994). If this is correct, then we don't have an instance of $F^*_{Move+Merge}$ in (21), but F^*_{Move} for two distinct adjacent heads. Once the lower head becomes phonologically weak it reduces to a suffix and becomes reanalysed as a lexical suffix, that is, as part of the higher head. Of course, this is possible if there is strict adjacency between the two heads, that is, no material can intervene between the two, which is in fact the case as noted by Benveniste (1968). The correlation of OV with rich inflectional morphology still holds. There seem to be two reasons why this analysis is preferable. First, it gives us a strong correlation between the morphological and syntactic structure of future-marked verbs. Consider, for example, the French future *chanterai* or the Italian *amerò*. The original infinitival marker *-r* forms the future ending, while *-ai* and *-ò*, the *habere* residues, have reduced to a bundle of agreement features (essentially an agreement affix). This is illustrated in (22):

(22)

chante	-r	-ai
ama	-r	-ò
V	T	Agreement

Given that V is in T we can capture the fact that it is *-r* in the verbal stem that marks future Tense in a straightforward way.

The second piece of evidence for this approach comes from those cases where clitics can intervene between the verb and *habeo*. There is evidence for this in all Romance varieties other than French, and particularly in Ibero-Romance. Here it appears that the medieval reflexes of *habere* were clitics rather than affixes. The evidence comes from the phenomenon of 'mesocliticization'. This term refers to the order *Infinitive-clitic-AIO*, found in Old Spanish and European Portuguese. An Old Spanish example of this is illustrated in (23) (see also Rivero (1997) for a discussion of the cliticization patterns in Old Spanish):

(23)

dezir	lo	hedes	al	rey?
tell	it	you.will	to	the king

'Will you tell it to the king?' (Zif 124: Lema & Rivero 1991)

We can account for these orders if we assume that *aio* was a clitic auxiliary in these languages. Let us assume that, as a clitic, it was subject to the general medieval Romance ban on clitic-first orders (the Tobler-Mussafia law, cf. Benincà 1995). As a finite verb, pronominal clitics were proclitic to it. Mesocliticization is derived once we assume that non-finite V moves to the immediately higher position, as an instance of LHM, similar to that in (21'). In other contexts, the clitic precedes the sequence infinitive + *aio*, as in wh-questions below (Lema & Rivero 1991:250):

(24)

A	quien	nos	dar	edes	por	cabdiellos?
to	who	us	give	you.will	for	leader

'Who will you give us as leader?'

The clitic precedes the infinitive just where it would not thereby come first in the string. Thus it appears that in these varieties, as long as mesoclisis remains, *habere* is not reduced to an affix, but remains a clitic auxiliary. The reanalysis as an affix is presumably blocked by the cliticization evidence (see also Wanner 1987) (we will come back to this point when we discuss the Greek future particle *tha* in the following section).

This analysis of mesoclisis links it to the ban on first-position clitics. Lema and Rivero (1991) show that the ban on first-position clitics and mesoclisis are lost together in Spanish in approximately the sixteenth century, confirming the idea that the phenomena are related. The ban on first-position clitics is found in

all the Romance languages at some stage in their history, and, indeed, mesoclisis is attested, albeit sporadically, in all Old Romance varieties except French (i.e. Languedoïl). Moreover, both (a form of) the ban on first-position clitics and mesoclisis are still found in contemporary European Portuguese (see Madeira 1995).

The current analysis allows us to account for the development of *habere* as an affix, and for why no comparable development affected the English modals. This difference follows from the simple fact that Latin was OV, while sixteenth-century English was not. Hence *habere* triggered LHM, as shown in (21'), giving rise to an Aux-final order, while English modals never did. Since ENE was VO, the modals did not develop into affixes.

We can now understand the third change in terms of the change from OV to VO word order that took place between Latin and Romance. The OV to VO shift was accompanied by a shift from superficial VP-Aux order to Aux-VP order. The obvious analysis of this in terms of what we have just said about OV languages is to say that leftward movement of VP and the associated V movement were lost (see Roberts 1997a for a sketch of how these changes may have taken place in Early ME; there a connection is made to the loss of morphological nominative-accusative distinctions – such distinctions were also lost in the transition from Latin to Romance, see also the discussion in Chapter 4, section 4.1). This change is of course a simplification, since movement dependencies are lost. In other words, when VP-Aux orders were lost as a part of the general word-order change, the sequence infinitive + *habere* was reanalysed as a single word and so the auxiliary became a lexical affix. This is apparently what happened in French, while the situation in other varieties is slightly more complex owing to the existence of mesocliticization, as we saw above. Fleischman (1982:121) also links the development of *habere* as an affix to the earlier OV word order and also relates the fact that perfect *have* has not developed into an affix in Romance to the fact that this construction developed later; note that the latter point follows on the present account for the same reason as the fact that the English modals have not developed into affixes.

A potential problem arises with respect to the history of the perfect *habeo*. Nigel Vincent (personal communication) has pointed out that there seems to be evidence that perfect *habeo* grammaticalized earlier (by the first century BC) than the future construction with *habeo*. Assuming that Latin was OV at this point, the question is why perfect *habeo* was not affected, that is, why *habeo* in this case did not reduce to an affix. Consider first the OV order and its significance for our analysis. Notice that our account of the reanalysis of future *habeo* to a suffix holds as long as it is empirically supported, that is, as long as we find

data where the infinitive precedes the auxiliary *habeo* and there can be no intervening material (strict adjacency). The data discussed in the literature seem to point in this direction. Whether the infinitive + *habeo* pattern reduces to a more general OV ('head-final') pattern can indeed be left open (see also Nocentini forthcoming). In other words, we can still maintain our analysis, assuming that the V–Aux order is an instance of LHM, while relaxing the typological correlation with OV. It is perhaps worth pointing out in this connection that, in a Kaynian antisymmetrical framework of the kind we are adopting here, the notion 'OV language' has no theoretical status; systems are OV to a greater or lesser extent depending on the greater or lesser incidence of XP movement to the left. Therefore it is quite unproblematic to assume that Latin may not have been 'fully OV' at the same time as having the leftward-movement operations which gave rise to the crucial infinitive–*habere* sequences. The second point concerns what prevented perfect *habeo* from following this pattern, especially if perfect *habeo* grammaticalized earlier than its future counterpart. We would like to suggest tentatively that the presence of *habeo* in perfect constructions at this early stage does not necessarily imply that *habeo* is an auxiliary. Instead we could assume that it is a lexical verb taking a participial (small clause) complement.

According to Harris and Campbell (1995:183) the *habeo* + (passive) participle construction in Latin (and early French) has the following distinctive properties: '(i) the possibility of distinct subjects in the two clauses; (ii) agreement; and (iii) word order'. This is illustrated with the following two examples from Latin and early French (cited in Harris & Campbell 1995:182–183):

(25) a. in ea provincia pecunias magnas collocatas habent.
in this province capital great invested have-3pl
'They have great capital invested in that province'
b. et [chis empereres] avoit letres seur lui escrites qui . . .
and this emperor has-3sg letters on him written which . . .
'and this emperor has letters written on him, which [say] . . .'

The examples in (25a) (from Cicero, cited by Vincent 1982:82) and (25b) illustrate the above properties. According to the above authors the Latin perfect construction can be analysed as a biclausal one. In our terms (but not in Harris & Campbell's) we could say that it has the following structure: *they have [great capital invested]*. The presence of systematic agreement on the participle can be taken as evidence for this construction. The situation changes in Old French, where participial agreement depends on the position of the object, that is, whether it precedes or follows the participle, and also where SVO is the

established word order. At this point perfect *habeo* can be taken to function as an auxiliary, as also pointed out by Harris and Campbell (1995). Whatever the exact details of the analysis, it allows us to assume that perfect *habeo* in (Late) Latin was not an auxiliary. Instead it seems that this grammaticalization took place later than that of future *habeo*. The chronological difference could be attributed to a number of reasons, one of which is the different complements found with perfect and future *habeo* (participle vs. infinitive respectively). If this is correct, then we can maintain the essence of our analysis and its possible correlation with word-order changes.

To conclude, we can see that the changes which led to the creation of the Romance futures were partly rather similar to those which affected the English modals, but that independent differences led to a different development. The first change, the development of *habere* into a future/modal auxiliary, was just like the sporadic grammaticalization of the ME premodals, and motivated by exactly the same factors: the possibility of interpreting *habere* as an element with defective (or no) argument structure and the consequent possibility of economizing movement by merging it directly as a functional head. The change of *habere* into an element triggering head movement followed from this change combined with the OV typology of Latin. Finally, *habere* became a pure affix (a feature of V triggering raising to a functional position) when certain independent developments in the clitic system took place (the loss of the ban on initial clitics).

In the following section, we will consider the development of the future particle *tha* in Greek, and see how its development relates to that of the two other cases discussed so far.

2.3 The Greek future

The third case we will consider is the grammaticalization of the 'future' particle *tha* out of the volitional verb *thelo* (want) in Greek. Classical Greek had a synthetic future very much like Latin, while Modern Greek (MG) uses a periphrastic construction consisting of the particle *tha* and the verb. The loss of the synthetic future goes back to the *Koine* (i.e. the Greek of the Hellenistic and Roman period, third century BC–fourth century AD), when various phonological changes, which are already attested in the early Hellenistic period, affected the vowel system of Greek. As a result of these changes the morphological paradigms of future indicative and aorist (past tense) subjunctive basically became homophonous (cf. Browning 1983:25–26, Horrocks 1997:108ff). While the aorist subjunctive (which still stood in opposition with the aorist indicative)

was also used to express the future, a number of periphrastic constructions also emerged. These were formed with verbs like *ekho* (have), *mello* (be about), *thelo* (want), *opheilo* (owe) followed by the infinitive. Of those, *thelo* + infinitive became the main future expression in the Byzantine period, around the tenth century (Joseph 1990:116, Horrocks 1997:167), while *ekho* + infinitive was restricted to the expression of the perfect tenses, thus differing from the Romance case discussed in the previous section. The gradual loss of the infinitive and its replacement by a finite complement also gave rise to an alternative construction with *thelo*, namely one that has a *(h)ina*-complement (*hina* is the predecessor of the subjunctive particle *na*).[12] It is a rather standard assumption in the literature that *tha* developed out of some form of *thelo* (*thelei* > *thel'* > *the*) plus *na* (cf. Jannaris 1897, Chatzidakis 1905, Meillet 1912, Bânescu 1915, Joseph 1983, 1990, Horrocks 1997, among others). Thus *tha* has been analysed as a typical case of grammaticalization: a lexical verb reduces to a grammatical marker (cf. Meillet 1912, Hopper & Traugott 1993, Bybee *et al.* 1994, McMahon 1994, Harris & Campbell 1995, Tsangalidis 1999).

Before we discuss the grammaticalization of *tha* in more detail, it is worth briefly describing its distribution in MG. Although *tha* is usually called the 'future' marker, it is not just restricted to a future context, but it gives rise to a number of modal readings, depending on the tense (+/−past) and aspectual (+/−perfective) properties of the verb. The future reading clearly arises when the verb is –past, +perfective, as shown in (26) below (see Tsangalidis 1999:212); prt = particle.

(26)
a. Tha *egrapse* to grama. (egrapse = +past, +perfective)
prt wrote-3sg the letter
'He would/must have written the letter.'
b. Tha *egrafe* to grama. (egrafe = +past, −perfective)
prt wrote-3sg the letter
'He was supposed to be writing the letter.'
c. Tha *grapsi* to grama. (grapsi = −past, +perfective)
prt write-3sg the letter
'He will write the letter.'
d. Tha *grafi* to grama. (grafi = −past, −perfective)
prt write-3sg the letter
'He must be writing the letter.'

If *tha* occurs with the –past, −perfect form of the verb (*grafi*) the epistemic reading is the preferred one, although the future interpretation is also possible

12. On the loss of the infinitive see Joseph (1983). For a more recent discussion of *na* see Philippaki-Warburton and Spyropoulos (2000) and the discussion in Chapter 3, section 3.1.

given the right context: for example, by adding the adverbial expression *tomorrow*. When *tha* occurs with +past, +perfective (*egrapse*), or +past, −perfective (*egrafe*) forms of the verb, the future reading is blocked, while an epistemic and/or counterfactual reading is possible. On this basis we analyse *tha* as a modal particle instead of a future (tense) marker. We further assume that *tha* is the head of a Modal projection which follows NegP (with negator *dhen*), as shown in (27) (cf. Rivero 1994, Drachman 1994, Roussou 2000) (we will elaborate on the structure in (27) in Chapter 3, section 3.1):

(27) $[_{NegP}$ Neg $[_{MP}$ tha $[_{TP}$ T...]]]

On this assumption, the grammaticalization of *tha* involves reanalysis from a lexical V to a modal particle high up in the functional structure.

Notice that *thelo* in MG is a lexical verb of volition, taking a *na*-complement, unlike its Classical Greek counterpart that subcategorized for an infinitive, as shown in (28a) and (28b) respectively:[13]

(28) a. Thelo na grafo.
want-1sg prt write-1sg
b. Thelo: graphein.
want-1sg write-inf.
'I want to write.'

Given that *thelo* remained as a volitional verb, there must have been a stage during which a 'lexical split' took place, giving rise to a lexical *thelo* and an auxiliary one which ultimately expressed futurity (cf. Pappas & Joseph 2001, see also Beths 1999 on English *dare*, and the discussion in the above sections). Thus the grammaticalization of *tha* involves three basic stages: lexical verb > auxiliary > particle. If *tha* is a Modal head, high up in the functional structure, and if auxiliaries are in T (cf. sections 2.1–2.2), then the grammaticalization of *tha* involves reanalysis from a lexical head (V) to a lower functional head, and then to a higher one. We will show that in its status as a particle, *tha* does not bear V features, thus differing in this respect from English modals, as well as the future affix in Romance. (In fact, as we will show in Chapter 3, section 3.1, *tha*, just like the subjunctive particle *na* are modal particles realizing M in the C system.) On the other hand, *thelo* as an auxiliary retained its V features. The loss of V features structurally corresponds to merger in M in the high functional field.

13. Notice that we use a different transliteration for the MG and CG data. Where MG has [f] (a labiodental fricative), CG had [p^h] (an aspirated labial stop). Furthermore, as the examples in (28) show CG has long vowels, while MG doesn't.

Let us now consider the changes that gave rise to *tha*. The discussion that follows is mainly based on Joseph (1983, 1990) and Pappas and Joseph (2001). One of the major syntactic changes attested in the *Koine* was the gradual loss of the infinitive. Infinitival complements were replaced by an *oti*- or *(h)ina*-clause, depending on the matrix predicate. Roughly speaking, verbs of saying, assertion, supposition and factives subcategorized for an *oti*-complement, while all the others took a *(h)ina*-complement. However, raising (*mello* 'be about', *opheilo* 'ought', etc.) and control (*tolmo* 'dare', *epithimo* 'desire/wish', etc.) predicates retained their infinitival complement. The verb *thelo* showed a double pattern: when the matrix and the embedded subject were coreferential (control), the infinitive was selected; when the two subjects were disjoint in reference, the *(h)ina*-complement with a verb in the subjunctive was selected. This is actually reminiscent of the situation we find in may modern Romance languages: control is compatible with infinitives, while a subjunctive complement requires disjoint reference (the obviation effect) (cf., for example, Picallo 1985, Kempchinsky 1986, Farkas 1992, among others). This systematic pattern broke down around the second century AD, allowing for coreference with an *(h)ina*-complement as well, as shown in (29) (from Joseph 1983:53).[14] In other words, the finite complement allowed for free reference, exactly as in MG:

(29) thelousin hoi Ioudaioi hina phoneusousin auton.
want-3pl the Jews-nom that kill-3pl him
'The Jews want to kill him.' (Act. Pil. 11.2.5)

We then see that infinitival complements were restricted to a small set of contexts which formed a proper subset of the *(h)ina*-complements. Some infinitival complements remained until the late Byzantine/medieval period (from the eleventh century onwards, extending up to the seventeenth century in some cases) (Joseph 1983:57). The future construction *thelo* + infinitive is a typical example of this. The availability of two distinct complements for *thelo* (infinitive vs. a finite clause) in the *Koine* period created the conditions for the two readings of *thelo*, that is, as an auxiliary and a lexical verb. In later stages (from the tenth century onwards), *thelo* + infinitive is mainly restricted to the future reading, while *thelo* + *na* expresses volition, exactly as in MG. Thus the lexical versus functional distinction of *thelo* is syntactically expressed on the complement (cf. Horrocks 1997:231, Tsangalidis 1999:151).

The sporadic use of the infinitive in the late Byzantine/medieval period is found with those predicates that took an infinitival complement in Hellenistic

14. In all the examples that come from Joseph's work we use his transliteration.

Greek. Interestingly, these verbs (e.g. *arkhomai* 'start', *thelo* 'want') are aspectuals or modals, and belong to the class of restructuring verbs:

(30) a. eis touto arksetai lalei (Morea 3824 (P), 13th century)
to this begin-3sg speak-inf
'At that he begins to speak.' (in Joseph 1983:58)
b. kathos to theleis mathei (Morea 1197)
as it want-2sg learn-inf
'As you will learn it . . .' (in Joseph 1983:64)
c. Gianni *lo* vuole fare.
John it want-3sg do
'John wants to do it.'

The example in (30b) with *thelo* shows clitic-climbing, a property typical of restructuring predicates also exemplified by the Italian (30c). Assuming that restructuring verbs trigger clause-union (see sections 2.1 and 2.2), (30a–b) are essentially monoclausal (cf. Joseph (1990, Chapter 5) for more arguments). In other words, we have reanalysis from a biclausal to a monoclausal structure, as in (31a). The structure in (31b) is the equivalent with a *na*-complement which does not show clitic-climbing and therefore no direct evidence for a monoclausal structure:

(31) a. $[_{TP}$ to theleis $[_{VP}$ t_v $[_{TP}$ mathei]]] → $[_{TP}$ to theleis $[_{VP}$ mathei]]
b. $[_{TP}$ theleis $[_{VP}$ t_v $[_{CP}$ na to matheis]]]

(31a) is consistent with what we argued for regarding the English modals and the auxiliary *habere* in Post-Classical Latin in the previous sections (recall also that this is consistent with Cinque's (2001) approach to restructuring, and the modification we provided in section 2.1). On this basis, we can argue that auxiliary *thelo* is merged in a functional head above the VP. So at least in the early stages of its development as an auxiliary, we can assume that it merged directly in v, and from there moved to T. The reanalysis of *thelo* as a T element goes along with the availability of a +past tense specification (and absence of any possible non-finite forms). Indeed, combinations like *ithela grapsei* (wanted-1sg write-3sg) are possible, albeit with a counterfactual reading (Pappas 2001). Lexical *thelo*, on the other hand, is merged in V, has argument structure, takes a CP complement, and moves to T (via v). At this point, then, we have a change from Move to Merge as far as the auxiliary *thelo* is concerned.

The next obvious question concerns the trigger for the monoclausal reanalysis in (31a). Recall that in our discussion of the English modals, we argued that reanalysis is triggered by the loss of the infinitival ending *-en*. If the *thelo* construction is also reanalysed as monoclausal, then we expect to find a similar loss of

infinitival morphology. This indeed turns out to be the case. The table in (32) below shows the reduction of the inflectional paradigm of the infinitive in Medieval Greek (from the twelfth century onwards) compared to that in Classical Greek. The new system has a single ending *-ein* [in] for the active infinitive and a single ending *-the:(n)* [θin] for the medio-passive (from Joseph 1990:23):

(32) a. *Classical Greek*:

	Active	Passive	Middle
Present/future	*-ein*		*-sthai*
1st aorist	*-(s)ai*	*-the:nai*	*-sthai*
2nd aorist	*-ein*	*-e:nai*	*-sthai*
Perfect	*-enai*		*-sthai*

b. *Medieval Greek* (from 12th century onwards)

	Active	Medio-passive
Present/future	*-ei(n)*	*-the:(n)* (loss of final vowel by analogy)
1st aorist	*-(s)ei(n)*	*-the:(n)*
2nd aorist	*-ei(n)*	*-the:(n)*

Apart from being morphologically reduced, the crucial change in (32b) concerns the loss of the final *-n* (see (30a, b) and (31a)), which makes the infinitival ending *-ei* [i] homophonous with the third-person singular (−past) form, as shown in (33) below:

(33) thelei grafein → thelei grafei
want-3sg write-inf want-3sg write-inf/3sg?

While the loss of the infinitival morphology in English gave rise to a bare stem form, in Greek it made the infinitive formally identical to a finite form.

To this end, the loss of final *-n* not only removed the trigger for a biclausal structure, in the sense that there was no clear evidence for an infinitival T (i.e. for T^*_{Move}), but also gave rise to reanalysis (or perhaps 'misanalysis') of the infinitive to a finite form. The result of this change was 'agreement spreading' to all persons, as shown in the following examples (according to Bânescu 1915, cited in Joseph 1990:116 these forms are attested in texts of the fifteenth century):

(34) a. theloun armatosoun to koumounin (Makhairas 372, 1.22, 15th century)
want-3pl outfit-3pl the expedition
'They will outfit the expedition.'

b. ′s to telos thelo sas to po (Bios Dem. 398, 16th century)
at the end want-1sg you it say-1sg
'In the end I will tell you it.' (in Joseph 1983:66)

c. dhe thes evris (Erotokritos A 1527, 17th century)
not want-2sg find-2sg
'You won't find.' (in Holton 1993:122)

d. kai panta thelo s' agapo (Gyp. I. 382 (A), 17th century)
and always want-1sg you love-1sg
'and I will always love you' (in Joseph 1990:136)

Thus *thelo* at this stage takes a complement that has a finite V but no subordinator (a VP perhaps), or a full CP introduced by *na* in its volitional reading, as shown in (35):

(35) a. thelo grafo
want-1sg write-1sg

b. thelo na grafo
want-1sg prt write-1sg

The question then is whether we can still maintain a monoclausal analysis for (34) and (35a).

At a first approximation, it seems that the only structural difference between (35a) and (35b) has to do with the presence of the particle *na* in the latter case. One possible analysis is to assume that *na* optionally deletes, yielding two different outputs at PF. Extending this analysis to the examples in (34), we would also say that what follows *thelo* is a CP with optional deletion of *na*. This would in turn imply that the monoclausal structure in (31a) goes back to being biclausal, as in (31b), albeit with C being optionally phonologically empty. However, this approach turns out to be problematic for a number of reasons. First, the two structures in (35) receive different interpretations. While (35a) is the future construction, (35b) is the volitional one, that is, in the former *thelo* does not have argument structure (it is an auxiliary), while in the latter it does (it is a lexical verb). Second, finite complements in Greek are always introduced by a subordinator (leaving aside some marked cases of *oti*-deletion in semi-direct speech in MG at least). In this respect the optional deletion of *na* in (35a) (and (34) for that matter) would come as a surprising exception, even more so as it would have to be restricted to the verb *thelo*. Third, although there appear to be two finite verbs in (35a), only one of them, namely *thelo*, can inflect for tense, as shown in (36) (there are no data in the literature where both forms inflect for past tense):

(36) a. k' *itheles* to 'kheis thamasma (Gyp. I.70, 17th century)
and wanted-2sg it have-2sg wonder
'And you would regard it a wonder.' (in Joseph 1990:135)

b. ithela t' agroike:so (Kats. *Thy*. V.316, 18th century)
wanted-1sg them hear-1sg
'I would hear them.' (in Joseph 1990:136)

As already mentioned, when *thelo* is +past, as in (36), it yields a counterfactual interpretation (cf. Pappas 2001). Apart from this, (36) and (34) are structurally alike (see the finite form of the main verb and the position of the clitic).

The double pattern illustrated in (36) is also attested in some Southern Italian dialects, for example Salentino (which has a very restricted use of infinitives) (Calabrese 1993:81–82):

(37) a. Voggyu (*ku*) kkattu nu milune
want-1sg (that) buy-1sg a melon
'I want to buy a melon.'
b. Voggyu *(*ku*) vvyeni kray.
Want-1sg (that) come-2sg tomorrow
'I want you to come tomorrow.'

Calabrese (1993) argues that *ku* (the equivalent of *na*) is optional when coreference is at stake, but obligatory with disjoint reference. In his analysis, (37a) is a case of optional *ku*-deletion. This construction is quite reminiscent of (35), given that when *ku* is absent the verb 'want' takes what looks like a finite V as its complement. As far as (35a) is concerned, we excluded the possibility of *na*-deletion. The question then is whether something similar also holds for (37a) in the absence of *ku*. In other words is it possible that (37a) also involves two different constructions, that is, one with a CP complement, and one with two finite Vs? Manzini and Savoia (forthcoming) argue that the *ku*-less example in (37a) is a serial verb construction ($V_1 + V_2$), thus a monoclausal structure. On the other hand, when *ku* is present there is a biclausal construction with a CP complement. The same account can extend to the Greek data in (35): when *na* is present *thelo* takes a CP complement, as in (31b). When *na* is absent, the auxiliary *thelo* occurs in a high functional head, while the main verb occurs either in V or in a lower functional head (presumably v).

Despite similarities, the Salentino data differ from the Greek ones in a number of ways. First, *want* in (37a) is interpreted as volitional irrespectively of the presence of *ku*, while in Greek we get two different readings depending on the presence of *na*. Second, while the *ku*-less construction in Salentino shows proclisis on the verb *want*, this is not the case in the Greek data under consideration. Going back to the data in (34b, d), as well as (36), we notice that the clitic follows *thelo*. Comparing these data to (30b), it is clear that there is a change in the position of the clitic, which now follows and does not precede *thelo* (see Joseph 1990, Chapter 5).

There are two ways to account for this change. The first option is somehow to link this change to agreement spreading. More precisely, in the 'agreement spreading' case, it is the lexical V and not *thelo* that carries the primary

agreement, which is in turn doubled by the auxiliary.[15] The verb *thelo* itself is merged in a high functional head that precedes the clitic position in the clause structure. The clitic, being an inflectional element, attaches to the verb that carries the main agreement, that is, the lexical verb. The alternative is to attribute this pattern to a change in the position of the clitic, bearing in mind that the clitic+V order (proclisis) of MG developed out of an enclitic one (see Horrocks 1997:210ff. for a discussion of cliticization in vernacular Medieval Greek, and Mackridge 1993).[16] Even if we take the latter approach though we would still have to assume that the verb *thelo* has moved to a higher functional position in the clause structure, so that it would precede the clitic. In other words, *thelo* further raised from T to C (or more precisely M), leaving the clitic in the I domain. The next stage of course would involve direct merger of *thelo* in M.

According to Joseph (1990), Pappas and Joseph (2001), the next developmental stage in the '*thelo grafo*' future involves reduction of agreement on *thelo* which surfaces as impersonal *thelei* (3rd singular) (attested in texts from the sixteenth century onwards):

(38)

a. [. . .] thelei sou dhosou ji andra sou (Panoria C' 245, 16th century)
want-3sg you give-3pl for husband yours
'[and] they'll give you as your husband' (in Markopoulou 2000)

b. ki emeis thelei ta kamome (Kats. *Thy*. II.322, 18th century)
and we want-3sg them do-1pl
'and we will do them' (in Joseph 1990:119)

Along with the *thelei*+V future, we also find the *the na* construction, which is actually attested in earlier texts, certainly from the fourteenth century onwards (see Jannaris 1897:558, Horrocks 1997:232):

(39)

a. kai plio dhe the na kartero (Erotokritos A 1231, 17th century)
and more not want prt wait-1sg
'and I won't wait any longer' (in Holton 1993:122)

b. autonos the na xanetai ston potho ojia mena (Erotokritos A 800, 17th century)
he want prt lost-3sg in-the desire for me
'he will be getting lost in the desire for me'

15. This could be analysed as an expletive-associate chain involving agreement affixes instead of DPs. The agreement on the main verb is 'argumental', while that on the auxiliary is 'expletive'. This is a possible analysis, bearing in mind that Greek has been a null-subject language throughout its history.

16. MG has proclisis, i.e. clitic + V (with the exception of imperatives and gerunds which show enclisis). The enclitic pattern is still attested in some Greek dialects, notably Cypriot Greek (see Rivero & Terzi 1995, Agouraki 2001, among others).

The standard idea is that *the* is a reduced form of impersonal *thelei* (*thelei* > *thel'* > *the*). If this is correct, then there must have been a stage where we find impersonal *thelei na* constructions. Although we have written records of *thelei*+V, this is not the case with *thelei na* (i.e. where *thelei* gives rise to a future interpretation). The question then is how we proceed from *thelo na* to *the na* (the latter being attested in the written records).[17] Notice that in the texts of the Cretan Renaissance (up to the seventeenth century), we find the *thelo*+V future (both with 'infinitival' V and agreement spreading), the *the na*+V future,[18] as well as some examples with *tha* (Holton 1993). The following example (from Chila-Markopoulou 2001:826) is revealing of this situation:

(40) enas mas *the na skotothei* ki o rigas tou *tha xasei.*
one ours will prt be-killed-3sg and the king his prt lose-3sg
'One of us will be killed and his king will lose.' (Erotokritos D', 1778–1780)

The Cretan comedies show an increased use of *tha* as well as examples of impersonal *thelei*+V. Holton's (1993) quantitative analysis shows (ignoring genre differences) that grammaticalization of *tha* is already completed in the late sixteenth century. Thus, if there was a *thelei na*+V future construction, with *thelei* being impersonal, that must have occurred much earlier.

Pappas and Joseph (2001) reconstruct the (impersonal) *thelei na*+V stage, as a necessary step for the reduction to *the na* > *tha*. However, this reconstruction is not directly supported by the data, in the sense that there are no written records of impersonal *thelei* taking a *na*-complement. The alternative would be to assume, following Horrocks (1997) (who follows Jannaris 1897), that the reduced form of *thelo*, namely *the*, was used to strengthen the future interpretation which was also conveyed by the *na*+V construction, that is, the reanalysed form of the subjunctive (but see Joseph 1990, Pappas & Joseph 2001 for counter-examples). Even if we accept this alternative, we still have to explain how we get *the*, or how *the* develops, in the future construction with *na*.

17. There may be some indirect evidence for this form that comes from the Cretan dialect, as in (i) (from Chila-Markopoulou 2001:827):

 (i) all' as einai, na sas to po thelei ki afto.
 but prt be-3sg, prt you it say-1sg want-3sg and this
 'But let it be, I'll also tell you this.'

 The other piece of evidence for impersonal *thelei* comes from examples like those in (38).

18. Holton (1993) points out that while the *thelo* + 'infinitive' future construction is restricted to the active voice in the epic poem of *Erotokritos*, the *the na* construction is not. He then suggests that the availability of the full set of voice and aspect distinctions in the *the na* construction, contributed to it being preferred over the *thelo* + infinitive future.

Let us start with *the* first. In connection to this, notice that the verb *thelo* in MG can take the following forms:

(41) a. thélo, théleis, thélei, théloume, thélete, théloun.
b. thélo, thés, thélei, théme, théte, thén(e).
'I want, you want, he/she wants, we want, you want, they want.'

The paradigm in (41) shows that the verb *thelo* has a series of reduced forms in second singular and the plural. In fact, a similar reduction is found for third singular in fast speech, especially when followed by *na*: [θeli] $>$ [θelə], although this is not presented in the written language. (In certain dialects, the forms in (41b) can further reduce, with the elimination of the final unstressed vowel.) Bearing these observations in mind, we could say that the reduced *the na* form (for auxiliary *thelo*) was derived from the paradigm in (41b). As Pappas and Joseph (2001) point out, the residue of a final [l] is found in dialectal forms of *the na*, such as the Cypriot form *enna*. In this respect *the* can be to some extent supported synchronically.

Consider next the form *thelei* which in the written records only appears as an impersonal with the 'infinitival' complement, but not with the *na*-complement. We could, however, provide some synchronic evidence for the reconstructed *thelei na* sequence, based on the non-volitional uses of *thelo* in MG, as in the examples below:

(42) a.

Ta	rouxa	theloun/*thelei	plisimo.
the	clothes	want-3pl/want-3sg	washing.

'The clothes need washing.'

b.

Ta	rouxa	theloun/thelei	na	ta	plinis	kala.
the	clothes	want-3pl/want-3sg	prt	them	wash-2sg	well

'The clothes need to be washed well./ You ought to wash the clothes well.'

In (42) the verb *thelo* translates as 'need' (non-volitional). In (42a) it takes a nominal complement, which is actually a deverbal noun, whereas in (42b) it takes a *na*-complement. Notice that when the nominal complement is present, agreement is obligatory. However, with the CP complement, the verb can either agree in number with the subject, yielding *theloun* (the personal construction), or not, yielding *thelei* (the impersonal construction). There is actually a slight difference in meaning, as in the personal construction the sentence translates as '*x* needs to be washed', while in the impersonal one it translates as 'you/one ought to wash *x* well'. We will not discuss the examples in (42) in detail (but see Roussou 2002a). It is interesting to note that the constructions in (42b) are considered rather colloquial, but are nevertheless quite productive. For this reason, their absence from the written language can be expected. At the same time, the

availability of non-volitional *thelo* in MG and in particular of impersonal *thelei* can be used as evidence for the existence of an intermediate *thelei na* stage which gave rise to the *the na* construction, on the basis of the phonological reduction described in (41).

Notice that non-volitional *thelo* in MG does not take the full set of inflections. For example, it is incompatible with the gerundive form, as well as with perfective aspect:

(43) a. *Thelondas plisimo/na ta plinis kala
needing washing/prt them wash-2sg well
b. *Ta rouxa thelisan plisimo /na ta plinis.
the clothes needed-perf-3pl washing/prt them wash-2sg
c. Thelo na me plinis.
want-1sg prt me wash-2sg
'I want/*need you to wash me.'

The gerundive (43a) and perfective (43b) forms are only available to volitional *thelo*. Furthermore, first- and second-person specification on *thelo* in the presence of a *na*-complement, necessarily triggers the volitional reading, and blocks the non-volitional one (and therefore can only be derived when the subject is animate, as volition is a property of animate entities. Notice that non-volitional *thelo* does not impose any animacy restrictions on its subject). We can then see that MG also shows a distinction between two readings of *thelo*, one of which is more grammaticalized than the other. So in present terms, volitional *thelo* is merged in V and moves to v and T, whereas non-volitional *thelo* is not merged in V (in some cases it can be merged in v, while in others, that is, when it has more of an epistemic reading, we could assume that it is merged in T).

What the preceding discussion shows is that although there may be no direct evidence for the presence of an impersonal *thelei* followed by *na* in its development as a future marker, we can reconstruct this stage by using indirect evidence from its non-volitional use in MG. On the basis of the discussion in this section we can summarize the changes in *thelo* + infinitive as in (44), and those involving *thelo* + *na* as in (45):

(44) a. *thelo* + infinitival V: agreement on *thelo* only
b. *thelo* + 'finite' V: agreement spreading
c. *thelo* + finite V: expletive agreement on *thelo*
d. *thelei* + finite V: impersonal (default agreement on) *thelei*

(45) a. *thelo* + *na*-clause: volitional *thelo*, referential agreement
b. *thelei* > *the* + *na*-clause: auxiliary, no agreement
c. *tha* + finite V: *tha* as a particle

Fully inflected *thelo* could be ambiguous between an auxiliary and a lexical verb. The ambiguity was partly resolved structurally by means of the complement clause: an infinitive for the former and a *na*-clause for the latter (cf. (44a) and (44b) respectively). *Thelo* with ‘expletive’ agreement in (44c) corresponds to auxiliary *thelo* only. Although it is morphologically identical to lexical *thelo* it forms a verbal complex with the finite verb which carries the primary agreement. This is supported by the position of the clitics, which at this stage mainly follow *thelo*. The next step in (44d) involves impersonal *thelei*: the verb in this case does not inflect for person (1st and 2nd). The *the+na* construction, with no obvious agreement on *the*, is also used to express future. What both *thelei*+V and *the na* constructions have in common is the presence of referential agreement on the second (main) verb. Whether *the* is an auxiliary or a particle at this stage is not so easy to tell. It is possible that it still bears a +V feature, but given its scopal properties it raises to a higher position. The next step of grammaticalization, then, involves a change from Move to Merge, whereby *the*, or more precisely the new form *tha*, is merged directly in a higher functional head. We take this head to be above T.

The relevant structures are as in (46) below:

(46) a. $[_{\mathrm{M}}$ thelei $[_{\mathrm{T}}$ grafo $[_{\mathrm{V}}\ \mathrm{t}_{\mathrm{grafo}} \ldots]]]$
b. $[_{\mathrm{M}}$ the $[_{\mathrm{T}}\ [_{\mathrm{V}}\ [_{\mathrm{C}}$ na $+\mathrm{V}_{\mathrm{lexical}}]]] > [_{\mathrm{M}}$ tha $[_{\mathrm{T}}\ [\mathrm{V}_{\mathrm{lexical}}]]]$

Example (46a) is the structure without *na*, which is monoclausal. Given that *thelei* is merged in a higher functional head, the lexical verb is allowed to raise to T. This change is important as we expect that upon the development of *tha* the lexical verb can inflect for past tense. Indeed this is the case, as shown in (26a–b) above. The prediction we make is that these constructions develop much later than the ‘future’ *tha*. As Pappas (2001) shows, this is in fact the case. The structure in (46b), on the other hand, has *the* in M and a series of unrealized functional heads, possibly lacking a lexical V altogether. In the absence of any tense or agreement marking on *the*, the structure in (46b) is reanalysed as a monoclausal one by the language acquirer. The question is how the *the na* form which survives in some MG dialects is to be analysed. We tentatively suggest that in these dialects *the na* has been reanalysed to a single lexical item (cf. *the na* > *enna* in Cypriot Greek. See also Jarad (1997) for a similar analysis of *for to* in the history of English.).

The next question is whether *tha* can be treated as an affix, or whether we can predict that it will reduce to an affix. In our discussion of the Romance future in section 2.2, we argued that the reduction of *habere* to an affix depended on a ‘head-final’ structure, that is, a structure with V raising over the auxiliary

habere. If our analysis is correct, then in order for *tha* to become a suffix, we would expect systematic V fronting to a higher C position. However, this is not attested in MG. In fact, *tha* and V movement seem to be in complementary distribution (cf. Roussou 2000). On the other hand, one might wonder whether *tha* could be analysed as a prefix. If that were the case, then we would expect that *tha* is always attached to the verb, contrary to fact, as it is possible to find clitics between *tha* and V. The systematic presence of clitics blocks the adjacency required between the two heads that host *tha* and the verb. Thus reanalysis to a prefix is not possible at this stage (see also the role of clitics for the (non)reduction of *habeo* to an affix in section 2.2).

2.4 Conclusion

To conclude, in the present chapter we have considered the development of English modals, the Romance and the Greek future. The first is a case of lexical verb > auxiliary reanalysis, whereby a lexical verb becomes an auxiliary and is merged directly in the relevant functional head. The second case is slightly more complex as it also involves reanalysis of an auxiliary to an affix. We showed that this step of diachronic change is attributed to the 'head-final' nature of Late Latin grammar. The third case involves the reanalysis of an auxiliary to a particle, which is realized higher up in the clause structure. As we will show in Chapter 3, this higher position can be identified with a C head (if this is correct then this is an instance of change from V to being in the I and then in the C system). This supports our contention that grammaticalization is reanalysis 'upwards' along the functional structure. Since movement is always local and upward, categorial reanalysis is also local and upward. We also notice that this kind of change affects a small, unproductive, morphological subclass of lexical class L, which can be reanalysed as a functional class. In particular, all reanalysed verbs discussed in this chapter have common characteristics, that is, they are stative, intensional, and arguably more prone to a non-thematic interpretation as modal functional heads.

We have also argued that grammaticalization-type changes follow a 'path' (*pace* Lightfoot 1998). This 'path' is structurally defined, broadly following the Cinque (1999) hierarchy of functional categories. Moreover, the path is traversed by the loss of steps of head movement, leading to changes from Move to Merge. As we will discuss in Chapter 5, section 5.2.2, the loss of movement of L (lexical) to F (functional) can yield two possible outcomes. The first case can apply to all Ls, giving word-order changes (loss of V2, loss of V-to-I, VSO > SVO, OV > VO, etc.). It is 'downward', fully productive, and involves no clear

semantic or phonological change (that is to the L-roots). The second case can apply just to a morphologically defined subclass of L, recategorizing it as F (ME modals, *bisogna, habere, thelo*, etc.). This loss of movement is 'upward', unproductive (but sensitive to morphological sub-regularities), and associated with semantic and phonological change (the former at least directly explicable in terms of category change). Loss of movement in general is a mechanism of change due to properties of language acquirers (cf. Clark & Roberts 1993), who aim at least-marked settings. As we argued in Chapter 1, the changes from $F^*_{Move} > F_{Merge}$ and from $F^* > F$ do yield less marked parametric settings and are thus to be preferred. We will discuss this in detail in Chapter 5.

3 *C elements*

3.0 Introduction

In Chapter 2 we discussed three well-known cases which involve reanalysis of a verb to an auxiliary element, an affix, or a particle. All three cases share reanalysis of V to a T element. In the Romance case, though, *habeo* further reduced to a suffix, while in Greek *thelo* became a particle arguably in the C system, thus following the V > T > C reanalysis path. In this chapter, we turn to the grammaticalization of C elements. In the first three sections (3.1–3.3) we will consider the development of the subjunctive particle *na* in Greek, of Southern Italian *mu* and of the infinitival marker *to* in English. In section 3.4, we look at the accounts of the development of *that*-complementizers in Germanic (cf. Ferraresi 1991, 1997, Kiparsky 1995, Longobardi 1991) and in connection to this we also briefly discuss the Greek complementizer *pou*. Finally, in section 3.5 we consider the development of complementizers out of lexical verbs, and in particular out of a serial verb construction. Our analysis heavily relies on the data discussed in Klamer (2000). In this case we also show that lexical to functional reanalysis is upwards.

Section 3.1 starts with the particle *na* in Greek, as its discussion is crucial for the analysis of the elements *mu* and *to*. The development of *na* is seen in the light of the changes that took place in the history of Greek and were discussed in the previous chapter in relation to *tha*. There we showed that in diachronic terms *tha* is derived from *thelo* + *na*. Synchronically, *tha* and *na* are in complementary distribution and share a number of properties; furthermore, *na* is also in complementary distribution with the complementizers *oti* (that) and *an* (if). The Southern Italian particle *mu* is, on the other hand, not in complementary distribution with other complementizers (in particular *chi*, the ‘that’ complementizer). In all other respects, however, it is very similar to *na*, as we will see in section 3.2. There we will describe the development of *mu* from the Latin adverb *modo* (‘in this way’) and the complementizer *ut*. The development of English *to* cannot be seen independently of that of modals, as it seems that both

elements partly relate to the loss of the subjunctive morphology in the history of English (cf. Los 1999). In this respect, the 'modals-*to*' and '*tha-na*' developments in English and Greek respectively show a number of similarities and support our analysis of grammaticalization. On the basis of the striking number of similarities with *mu* and *na*, we argue that *to* is also a C element (section 3.3). Reanalysis of *na, mu* and *to* represents an instance of grammaticalization which is not actually associated with loss of movement steps. Instead certain lexical and functional elements change their selectional properties, in such a way that certain features (e.g. mood features) formerly associated with a lower head become associated with a higher position. In this sense, it may still be possible to claim that grammaticalization is always upward. Furthermore, as we will see, the loss of inflectional morphology, in these cases subjunctive and infinitival morphology, plays an important role in these changes, as it does in the changes we discussed in the previous chapter.

The development of complementizers like *that* (section 3.4) represents another case of grammaticalization where a demonstrative (or pronominal) element is categorially reanalysed as a complementizer. We will argue that this reanalysis is also an instance of structural simplification, further supporting our analysis from the development of the Greek complementizer *pou*.

Finally, the development of a complementizer out of a report verb or verb of saying is addressed in section 3.5. This option was already mentioned briefly in the previous chapter in relation to *tha* out of the verb *thelo*. In the present chapter we draw on more data and show how this kind of reanalysis is also consistent with our approach to grammaticalization.

3.1 From complementizer to particle: the case of Greek **na**

3.1.1 The status of **na** *in Modern Greek*

In the present section we will discuss the grammaticalization of the subjunctive particle *na* in Modern Greek (MG) from the Classical Greek (CG) complementizer *hína*. Reanalysis of *hína* involves morphophonological reduction (*(h)ína* > *iná* > *na*), and arguably a change in categorial features, assuming that it was reanalysed from a complementizer to a modal particle. There have been different approaches regarding the status of *na* in MG. According to some analyses *na* is a C element, just like *oti* (that) and *an* (if) (Agouraki 1991, Tsoulas 1993). For others, *na* is a mood particle (Veloudis & Philippaki-Warburton 1983), realizing a MoodP below C (Philippaki-Warburton 1992, 1998, Tsimpli 1990, Rivero 1994, among others). Depending on which of these two positions we adopt, we get different implications for the development of *na*. More precisely,

if *na* is a C element, then grammaticalization has not affected its categorial status. If, on the other hand, *na* is a Mood head (a modal particle), then grammaticalization involves a change from C > Mood. Moreover, if Mood occurs in a position lower than C, we have an instance of 'downwards' grammaticalization, which is not consistent with the claims made in Chapter 2. In order to account for its development, we first need to clarify the synchronic properties of *na*.

Let us then start by outlining an analysis of *na* in MG. First, note that the particle *na* shares a number of properties with *tha*, with which it is in complementary distribution. In particular, both particles form a complex with the verb, from which they can only be separated by clitics, as in (1):

(1) a. thelo [na to aghoraso]
want-1sg prt it buy-1sg
'I want to buy it.'
b. tha to aghoraso.
prt it buy-1sg
'I will buy it.'
c. *na tha to aghoraso.

They also select a verb which can take any inflection along the +/−past, +/−perfective dimension (the –past, +perfective V is often described as a 'dependent' form, in the sense that it cannot occur without the presence of a modal particle or certain complementizers; see Holton *et al.* (1997)). The examples below illustrate this with *na* (the relevant examples with *tha* are given in (26) in Chapter 2):

(2) a. na *egrapse* to grama. [egrapse = +past, +perfective]
prt wrote-3sg the letter
'Is it possible/could it be the case that he wrote the letter?'
'I wish he had written the letter.'
b. na *egrafe* to grama. [egrafe = +past, −perfective]
prt wrote-3sg the letter
'Is it possible/could it be the case that he was writing the letter?'
'I wish he would write the letter.'
c. na *grapsei* to grama. [grapsei = −past, +perfective]
prt write-3sg the letter
'He should/must write the letter.'
'Is it possible that he writes the letter?'
d. na *grafei* to grama [grafei = −past, −perfective]
prt write-3sg the letter
'He should/must write the letter.'
'Is it possible that he's writing the letter?'

The sentences in (2) can stand as matrix clauses in which case they are subject to a restricted interpretation. For example, (2a–b) can be interpreted as modal questions, expressing the speaker's doubt, wonder, surprise, etc., or as wishes. The same holds for (2c–d), with the additional possibility that they can also express a command (see Rouchota 1994 for the pragmatics of matrix *na*-clauses).

Despite their similarities, *na* and *tha* also differ in some clear ways. The first difference has to do with the choice and position of the negator used: *tha* is preceded by the negator *dhen*, while *na* precedes negator *min*:

(3) a. *dhen* *tha* to aghorasis.
not prt it buy-2sg
'You will not buy it.'
b. (*na*) *min* to aghorasis.
prt not it buy-2sg
'You shouldn't buy it.'

So in the case of *na*, negation may also intervene between the particle and V. Notice incidentally that if (3b) is taken as a matrix clause, *na* is optional.

Second, and crucial to the discussion that follows, *na*, unlike *tha*, can directly introduce a complement clause, as shown in (1a) above. This goes along with the fact that while *tha* is compatible with typical complementizers like *oti* (that) and *an* (if), *na* isn't, as the contrast between (4a) and (4b) illustrates:

(4) a. Apofasisa [*oti tha* to aghoraso].
decided-1sg that prt it buy-1sg
'I decided that I will buy it.'
b. Apofasisa [(**oti*) *na* to aghoraso]
decided-1sg prt it buy-1sg
'I decided to buy it.'

The pair in (4) is revealing in one further respect: as the English translations show, *na*-clauses distribute (to a large extent) like infinitives. Roughly speaking, *na*-complements occur with volitionals, aspectuals, causatives, implicatives, experiencer predicates and perception verbs; under certain conditions *na*-clauses also occur with epistemics (cf. Veloudis 1985, Roussou 1999), and verbs of saying in which case the *na*-complement corresponds to an embedded imperative. At the same time, when *na* introduces a matrix clause, it translates with a modal in English (cf. (2)). In this respect *na*-clauses in MG seem to subsume the function of infinitives (mainly in the embedded contexts) and Romance subjunctives or English modals (mainly in root contexts).

As already mentioned, *na* has received different treatments in the literature. If the crucial factor is its complementary distribution with *oti* and the fact that like

oti it precedes negation, then the conclusion has to be that *na* is in C (Agouraki 1991, Tsoulas 1993), as shown in (5a). If, on the other hand, one focusses on the similarities with *tha*, then *na* will have to be analysed in the same way. To this end, Rivero (1994) argues that both *tha* and *na* are in Mood(P) (see also Drachman 1994), as in (5b). Finally, there is a third option, namely to treat *na* distinct from both *oti* and *tha*. This is the stand taken by Philippaki-Warburton (1992, 1998) who argues that *na* is in Mood, while *tha* is the head of a FutureP (above TP), as in (5c). Notice also that in this analysis NegP is also below MoodP:

(5) a. $[_{CP}$ *na* $[_{NegP}$ *dhen/min* $[_{TP}$ T . . .]]]
b. $[_{CP}$ C $[_{NegP}$ *dhen/min* $[_{MP}$ *na/tha* $[_{TP}$ T . . .]]]]
c. $[_{CP}$ C $[_{MoodP}$ *na* $[_{NegP}$ *dhen/min* $[_{TP}$ *tha* . . .]]]]

Each of the above analyses captures a different insight regarding the particles under consideration, namely that *na* and *oti* have some properties in common (5a), or that *na* and *tha* have something in common (5b), or finally that *na* is distinct from both *oti* and *tha* (5c).

Where the above analyses seem to fail with respect to *na*, however, is that they analyse it either as a modal particle or as a complementizer. Instead the distribution and properties of *na* seem to suggest that it has features of both. If this is correct, then we expect *na* to be in a position where it can realize both types of features. In other words, *na* has modal properties like *tha* (irrealis), as well as complementizer properties like *oti/an*, given that it directly introduces complement clauses. It is perhaps the combination of these two properties that also allows *na* to occur in root clauses, yielding an interpretation that corresponds to certain clause-types (i.e. non-declarative). This double property of *na* seems to suggest that *na* can realize features of both M and C. Based on this, Roussou (2000) argues that the above similarities and differences can be expressed once we adopt an articulated C structure. Given that *na* and *tha* are actually particles and furthermore precede inflectional elements such as clitics, the idea is that the M position which they seem to occupy is actually situated in the C system, and can be identified with Rizzi's (1997) Fin (Finiteness) head. The typical complementizers *oti/an* occupy a higher C head, which is analysed as a clause-typing operator, similar to Rizzi's Force. The complementary distribution of *na* and *tha* is accounted for on the basis that they both occupy M. However, *na*, unlike *tha*, further raises to C, hence its incompatibility with *oti/an*. The relevant structure is given in (6):

(6) a. $[_{CP}$ *oti* $[_{MP}$ *tha* $[_{TP}$ T . . .]]]
b. $[_{CP}$ *na* $[_{MP}$ t_{na} $[_{TP}$ T . . .]]]

The structures in (6) do not include negation. Given that the choice of the negator in MG is sensitive to mood/modality, it is argued that NegP is also part of the C system, and more precisely that it is situated between C and M (see also Chapter 4, section 4.2). However, if negator *min* is present, movement of *na* from M to C should be blocked under Minimality. According to Roussou (2000), when *min* is present, *na* is directly merged in C. The features of M in this case are lexicalized by *min* (in movement terms, *min* is merged in M and moves to Neg). Thus the structure in (6) is revised as in (7):

(7) a. $[_{CP}$ *oti* $[_{NegP}$ *dhen* $[_{MP}$ *tha* $[_{TP}$ T...]]]]
b. $[_{CP}$ *na* $[_{NegP}$ *min* $[_{MP} t_{min}$ $[_{TP}$ T...]]]]

On the basis of this analysis, the elements *na* and *tha* share the M feature (modal particles), while *na* and *oti/an* are clause-typing elements (typical complementizers). Similarly negation *dhen* has the Neg feature, while *min*, apart from Neg, can also bear the M feature.[1]

The structure in (7) needs to be slightly modified to accommodate the co-occurrence of *na* with the complementizer *pou* in relative clauses (with an indefinite head, embedded under an intensional V), as in (8) below (on the properties and development of *pou* see section 3.4 below):

(8) Thelo ena spiti [*pou* *na* (*min*) exi kipo].
want-1sg a house that prt (not) have-3sg garden
'I want a house that has (doesn't have) a garden.'

If *na* is in the highest C, then the question is what position *pou* occupies in the structure in (7). Roussou (2000), based on further evidence from the distribution of topics and foci, argues that the Force head of Rizzi (1997) splits into two heads: the clause-typing one (as identified above), which is essentially an Operator (Op) head (after Manzini & Savoia 1999), and an even higher C head that has the properties of a subordinator (in the sense that it functions as a clause-linking element).[2] The Op position here stands for the head where the properties of propositional operators are represented. The revised structure is given in (9):

1. Notice that in the absence of *na*, as in (3b), negation can raise to C and lexicalize clause-typing features as well (cf. also Manzini & Savoia 1999 on negation in the Albanian dialect of Arbëresh). In this respect it differs from negator *dhen*. This is further supported by the fact that *min* occurs in prohibitions of the following type: *mi!* (= don't), while this is not possible with *dhen* (on the distribution and readings of *mi(n)* in MG see Janda & Joseph 1999).
2. There are various proposals regarding the elaboration of the C structure. For more recent proposals see Bennis (2000), Rizzi (2001), Haegeman (2002), among others. For MG see also Alexiadou (1997).

(9) $[_{\text{CP}}$ *pou* $[_{\text{OpP}}$ *na* $[_{\text{NegP}}$ *min* $[_{\text{MP}}$ t_{min} $[_{\text{TP}}$ T . . .]]]]]

The structure in (9) has three C heads, each of them bearing a distinct feature specification, which can be lexicalized in different ways by different lexical items. The schema in (9) accommodates the fact that *na* can co-occur with a complementizer, provided the latter lexicalizes features associated with the highest C head, that is, it is a subordinator. Other elements with which *na* forms a complex are: *jia* (for) in purpose clauses, and *xoris* (without). In terms of the present discussion, we will assume that these are also in the highest C.

Before we consider the history of *na*, it is worth clarifying the development of *tha* in the context of the structure given in (9). In the previous chapter, we discussed *tha* and argued that it occupies a functional head high up in the clause structure. In this chapter we identified this position as a head in the C domain, namely M. What we observe, then, is that the reanalysis of *thelo* to *tha* involves two steps: first, as an auxiliary in the I domain, and next as a particle in the C domain. The first step of grammaticalization involves reanalysis from lexical to functional, the second from functional to functional. Both steps are consistent with our claim that grammaticalization is upwards.

Bearing the above analysis in mind, we can next turn to the development of *na*. Notice that according to the structure in (7), *na* is a C element, which can realize two positions in the left periphery (M and the Operator heads). If *hina*, the ancestor of *na*, was a C element, then reanalysis of *hina* to *na* did not involve a change in categorial status. The question is in what sense the development of *na* can be taken as an instance of grammaticalization.

3.1.2 The development of ***na***

The standard assumption is that the particle *na* developed out of the complementizer *hina* > *ina*, which in CG introduced purpose clauses, as the examples below illustrate (from Goodwin 1894:290–292):

(10) a. Eipo: ti de:ta kall', hina orgise:i pleon? (S. OT 364)
say-1sg what indeed more, that be-angry-3sg more
'Shall I speak still further, so that you may be more angry?'

b. . . . hina e:san me:den hoi deinoi logoi. (E.frag. 442)
that were nothing the eloquence words
'. . . so that words of eloquence might be as nothing'.

The verb in the *hina*-clause could be in the subjunctive, as in (10a), or the optative (also called the 'secondary' subjunctive) in case the matrix T were +past. Past tense indicative was also possible, as in (10b), but in this case the *hina*-clause expressed a purpose that depended on some unfulfilled condition,

that is, it yielded a counterfactual interpretation. According to Liddell and Scott (1968:830) *hina* was also used as a place (or circumstantial) adverb, as in (11):

(11) a. ouk hora:is hina ei kakou
not see-2sg in-what are calamity
'You don't/can't see in what a calamity you are.'
b. hina ge:s
what land
'whatever land/wherever'

In (11) *hina* translates as a relative pronoun. On the basis of (10) and (11) we could say that *hina* was used both as a complementizer and a pronominal, that is, a D element. This is quite reminiscent of the English *that* which is ambiguous between a complementizer and a demonstrative element. As we will see in section 3.4, at a more abstract level these two uses of *that* could be unified. Regarding *hina*, we will have to assume that at some point in its history it lost the ability to function as D, remaining as a C element only. It is hard to say when this happened, and it is not strictly relevant to our present discussion given that we will focus on the development of the complementizer *hina* to the modal particle *na*.

Purpose in CG could also be expressed by an infinitive, as in (12) (from Joseph 1983:40):

(12) deka to:n neo:n proupempsan es ton megan limena *pleusai*. (Thuc. 6.50)
ten of-the ships sent-ahead-3pl in the great harbour sail-inf
'they sent ahead ten of the ships to sail into the great harbour'

So to some extent the distribution of *hina*-clauses and infinitivals overlapped, at least with respect to purposives. On the other hand, while *hina*-clauses were mainly adjuncts, infinitives were the main expression of complementation in CG, a picture which changed dramatically in the *Koine* (third century BC – fourth century AD), leading progressively to the system of finite complementation of MG. The restructuring of the complementation system from non-finite to finite in the history of Greek is to a great extent due to certain morphophonological changes as well as to the weakening of the infinitive which acquired a more nominal status (cf. Joseph 1990). Some of these changes were already introduced in the previous chapter (section 2.3) with respect to the formation of the future.

The first relevant change involves the loss of morphological mood. CG, as opposed to MG, distinguished between four morphological moods (as well as having infinitives and participles, the so-called non-finite moods): the indicative,

the subjunctive, the optative and the imperative (cf. Goodwin 1897).[3] A number of phonological changes (e.g. loss of the distinction between long and short vowels, restructuring of diphthongs to monophthongs) that took place in Post-Classical Greek (Hellenistic period onwards) affected verbal morphology: for example, the future indicative and the aorist subjunctive became almost homophonous (cf. Chapter 2, section 2.3); the present indicative and the subjunctive paradigms were also affected in the same way, thus becoming almost homophonous (cf. Browning 1983, Chapter 2 for references).[4] Although the morphological distinction between the indicative and the subjunctive was lost in the present tense, it remained in the aorist, given that the two moods were distinguished formally by a different set of agreement affixes. Syntactically, the two moods were distinguished through the choice of different negators (*ou* for the indicative, *me:* > *mi(n)* for the subjunctive). Another important change involved the loss of the optative, which was in any case mainly found in embedded contexts in CG, and was mainly replaced by the subjunctive. Following this change, *hina*-clauses in the period of the *Koine* were primarily associated with the subjunctive. It is this distribution of *hina*+subjunctive that formed the background to the reanalysis of *hina* as the subjunctive (i.e. modal) particle. Apart from the changes in the mood system, the other crucial change involved the replacement of infinitivals by a finite clause in complement position as already mentioned. This change is viewed as 'gradual' in the sense that the infinitive (or what was originally an infinitive) persisted in a few constructions until the medieval period, as shown in the previous chapter with respect

3. MG has a binary system of morphological mood: indicative vs. imperative. In this respect, any form following *na* is characterized as indicative (cf. Lightfoot 1979, Tsangalidis 2002). Any subjunctive meaning is derived by the combination of the tense/aspectual properties of V along with *na*. The lack of morphological subjunctive in MG is not an uncontroversial issue. One view endorsed by various traditional grammars is that at least the −past, +perfect forms of V (the 'dependent' forms) are morphologically characterized as subjunctive (while −past, −perfect can be ambiguously taken as indicative or subjunctive). However, this account is based on historical reasons, namely the fact that these forms derive from the CG aorist subjunctive (see Tsangalidis 2002 for a review and a discussion of this issue). Tsangalidis and Valetopoulos (1999) show that the reanalysis in the verbal system along the tense/aspectual dimensions was already in place by the eleventh century (Byzantine Greek).
4. The relevant paradigms for the present tense are given below:

   (i) *Indicative*: grapho: – grapheis – graphei – graphomen – graphete – graphousi
   Subjunctive: grapho: – graphe:is – graphe:i – grapho:men – graphe:te – grapho:si

   For a discussion of the loss of the optative mood in relation to (as well as independent of) these changes see Browning (1983), Horrocks (1997).

to *thelo*. The importance of this change was that it gave rise to the restructuring of the complementation system of Greek.

There are a number of morphophonological as well as syntactic differences between CG *hina* and its MG descendant *na*. First, *na* is phonologically reduced; second, it involves a stress shift: *hína* > *iná* > *na*. According to Trypanis (1960) this stress shift must have already taken place by the sixth century AD, as the metric properties of Romanos' *Hymns* suggest. Third, while *hina* was mainly used to introduce purpose ('final') clauses, that is adjuncts, as in (10), *na* has a much wider distribution. In particular, *na* is found not only in adjunct purpose clauses (usually reinforced by the preposition *jia* (for)), but also in complement and matrix clauses. The reanalysis of *na* as a modal particle, then, is accompanied by a wider distribution, which allows it to occur not only in embedded, but in root contexts as well. The presence of *na* in complement clauses is rather straightforwardly linked to the 'gradual' retreat of the infinitive discussed in the previous chapter, which was attested in the *Koine* (for the more general change involving purpose and infinitives see Haspelmath 1989). On the other hand, its presence in matrix clauses is more linked to the 'gradual' retreat of the subjunctive, which is now reinforced by *ina*. There are already examples of matrix *ina*-clauses in the *Koine*, as in (13) below (these sentences mainly have an imperative force) (Mandilaras 1973, §589).

(13) e: de gune: *ina* fove:tai ton andra.
the prt woman prt be-afraid-3sg the man
'The woman should be afraid of the man.' (Eph. 5:33, New Testament)

As noted by Mandilaras, during this period matrix *ina*-clauses almost freely alternate with the morphological subjunctive. Notice crucially that the *na*-option is the only possible one in MG given that the latter has no morphological subjunctive.

Philippaki-Warburton and Spyropoulos (2000) argue that the use of *ina* in matrix clauses points towards the beginning of its grammaticalization as a mood marker. In other words, *ina* is no longer a conjunction. This is further supported by the fact that *ina* can also be associated with deontic modality, as shown in (13). Bybee *et al*. (1994:224) argue that the matrix use of *ina* > *na* developed out of its use in embedded clauses, and in particular through its association with predicates that carry a modal reading, such as *want, order*, etc. Although this is probably true, it is worth pointing out that *hina*, even in its original meaning as a purpose conjunction, must have been associated with some sort of modality. More precisely, in a sentence like the following from MG there is an implicit modal reading:

(14) Irtha [(jia) na se dho].
came-1sg for prt you see-1sg
'I came to see you.'

The purpose clause *jia na* in (14) indicates intentionality on the part of the matrix subject (*I came with the intention to see you*), which in this case happens to be the speaker as well. At the same time purposives denote unrealized events, so in this respect they can be associated with irrealis mood. The same holds for the purpose *to*-infinitive in English (cf. section 3.3). In other words, modality is an intrinsic property of purposives. Moreover, if this property is encoded on C, as the head of the clause, then in the Greek data under consideration it must have become associated with *(h)ina*. On this basis we can capture the fact that *hina* was a good candidate for introducing complement clauses after verbs with (implicit) modal readings, such as *want, order*, etc. (cf. the discussion in Chapter 2, section 2.3).

On the syntactic side, the question that needs to be addressed is how the change in the distribution and the properties of *ina* > *na* discussed above can be formally represented. Philippaki-Warburton and Spyropoulos (2000) argue that the structural change that took place can be summarized as follows:

(15)
a. $[_{CP}\ \textit{ina}\ [_{IP}\ I_{[Mood/Tense]}\ [_{VP}\ V]]]$ >
b. $[_{CP}\ \textit{ina}\ [_{MP}\ M\ [_{IP}\ I\ [_{VP}\ V]]]]$ >
c. $[_{CP}\ C\ [_{MP}\ \textit{ina}\ [_{IP}\ I\ [_{VP}\ V]]]]$

The structure in (15a) corresponds to the CG period: Mood and Tense are fused into a single head. So according to their analysis, Mood features are morphologically licensed, so they do not project syntactically. The structure in (15b) is an intermediate stage, following the loss of the morphological distinction between the indicative and the subjunctive, which are nevertheless formally distinguished as they occur in different contexts and take different negators. At this stage, the Mood features cannot be licensed morphologically, but only syntactically. This gives rise to the projection of an independent M(ood) head in (15b), which at this stage is occupied by a zero morpheme, while *ina* is still in C. The structure (15c) represents the reanalysis of *ina* as a Mood head. According to their analysis, the restructuring of this system in the *Koine* gave rise to further changes, such as the association of the imperative with the M position as well (but see Rivero & Terzi 1995 for an alternative approach). Moreover, the phonological reduction of *ina* > *na* gave rise to the formation of a single phonological and syntactic unit consisting of the particle and the verb.

For Philippaki-Warburton and Spyropoulos (2000) the relevant changes are as follows: (a) deflection (loss of morphological mood distinctions),

(b) grammaticalization (from complementizer to mood particle), (c) phonological reduction (*ina* > *na*). The deflection was completed during the first two centuries of the *Koine*, thus allowing for the projection of a MoodP, which in turn allowed for the reanalysis of *ina* to a subjunctive particle (change (b)). In their analysis the grammaticalization of *na* is not a distinct process but the reflex of the emergence of a functional category (Mood) in the clause structure. The projection of M in the syntax triggers further changes in the verbal system, which we will not discuss here (but see Philippaki-Warburton & Spyropoulos 2000 for an interesting discussion).

Although the schema in (15) formally expresses the relevant changes regarding *na*, it relies on a number of assumptions that are not directly compatible with our approach to clause structure and grammaticalization. In particular, the idea underlying (15a) and the change represented in (15b) is that features associated with functional heads do not project universally; instead their projection depends on their morphological properties (cf. Thráinsson 1996). This approach is also reminiscent of the one put forward by Giorgi and Pianesi (1997), according to which features associated with functional heads may 'pack' and 'unpack'. The idea we have been following here, on the other hand, is closer to the analysis proposed by Cinque (1999), namely that functional heads project universally, following a fixed order. The second problem presented by (15) is that the grammaticalization of *ina* to a subjunctive particle is associated with downward movement, that is, C > Mood. In our discussion of English modals, and the Romance and Greek future we argued that the path of grammaticalization can be taken to correspond to that of movement, and given that movement is always upwards, categorial reanalysis also has to be upwards. Loss of movement in a downward fashion is of course possible, as in the case of the loss of V-to-I movement in the history of English, but this is not an instance of grammaticalization. This is further supported by the fact that the loss of V-to-I movement affects a whole class of items (main verbs in this case), and is not restricted to a small number of lexical items. In other words, it does not result in categorial reanalysis.

Notice that the structure in (15c) is based on Philippaki-Warburton's (1992, 1998) account of *na* as a Mood head, which is distinct from *tha* as well as from *oti*. Moreover, MP in her analysis is situated below C and above NegP (which is presumably part of the I system) (cf. (5c)). On the other hand, we have assumed that MG *na* shares features with both of these items. In terms of the structure assumed here (cf. (9)), *na* realizes features associated with Op and M (the latter in the absence of negation). Both Op and M are in the C system, and therefore above the I domain. In other words, MG *na* is in the C system. If *hina* was

also in the C system, given that it introduced embedded clauses (purposives first and then complements), then there is no categorial reanalysis: *hina* and its descendant *na* are C heads. If this is correct, then why is the development of *na* considered an instance of grammaticalization? Is it only restricted to phonological reduction and some sort of semantic 'bleaching', or does it also have a structural correlate?

Notice that the development of *na* as the subjunctive particle is related to the loss of the subjunctive morphology, as correctly noted by Philippaki-Warburton and Spyropoulos (2000). In their system, this leads to the emergence of a functional category, namely Mood, and the 'lowering' of *hina* to that position from C. On the other hand, in our system, M (Mood/Modality) is present and is in the C system in any case. As also noted above, the distinction between indicative and subjunctive mood was reflected in the agreement system. In other words, there was no distinct 'mood' affix. Instead, there were two series of agreement affixes, one for the indicative, the other for the subjunctive, and the basic distinction involved a short versus a long vowel respectively in all persons (with the exception of first singular, which was homophonous for both moods, see note 4). What changed upon the loss of the morphological distinction was the position where 'mood' features were spelled out. Mood in CG is associated with verbal inflection, and more precisely with agreement; so we could say that mood features are realized in the I system. From the period of the *Koine* onwards the realization of Mood is almost exclusively associated with some head in the C system. In other words, we have the following change:

(16) $[_{\mathrm{C/M}}\ [_{\mathrm{T}}\ \mathrm{V{+}affix}_{\mathrm{indicative/subjunctive}}]] > [_{\mathrm{C/M}}\ \textit{ina}{>}\textit{na}_{\mathrm{subjunctive}}\ [_{\mathrm{T}}\ \mathrm{V{+}affix}]]$

As (16) shows, the mood features are now lexicalized in a higher head, namely *na*. Moreover, 'subjunctive' mood becomes associated with a specialized morpheme. In this respect the change is upwards: features previously associated with a lower head in the I domain now become part of a lexical item in a higher head in the C domain. We can thus maintain that the development of *na* is an instance of grammaticalization, without assuming that *na* itself has lowered. The grammaticalization of mood (subjunctive) features in C goes along with other changes that have affected the phonological and semantic content of the lexical item that realizes these features, namely purposive *ina* to modal (subjunctive) marker *na*. This way we maintain our basic claim that grammaticalization is upwards. Crucially in this case there is no loss of movement involved. It is perhaps not an accident that this kind of reanalysis is from functional to functional, whereas in the auxiliary cases discussed in the previous chapter the crucial step in the reanalysis is from lexical to functional.

It is important to note that the properties of *na* in MG cannot be seen independently of those of *tha* (as well as the hortative particle *as*). As shown in the previous chapter, the grammaticalization of *tha* takes the presence of *na* as a prerequisite. While synchronically the two particles share a modal feature, they further differ in that *na*, unlike *tha*, also has a clause-typing (Op) feature.

At this point it may seem natural to ask which of these two features (M, Op) was inherent to the CG *hina*, and which one was acquired by *na*. To be more precise the question is whether *hina* in CG was in the lower C head, namely M, from where it moved to Op, or whether it was in Op originally from where it attracted the features of M, upon becoming a modal particle. The two alternatives are given below:

(17) a. $[_{CP/OpP}$ C/Op $[_{MP}$ *hina* $[_{TP}$ . . . > $[_{CP/OpP}$ *oti/na* $[_{MP}$ t_{na} $[_{TP}$ . . .
b. $[_{CP/OpP}$ *hina* $[_{MP}$ M $[_{TP}$ . . . > $[_{CP/OpP}$ *oti/na* $[_{MP}$ t_{na} $[_{TP}$ . . .

The output in (17a) and (17b) is the same, while the input differs. Deciding between the two representations in (17) is not an easy task, as it would require a detailed analysis of the complementizer system in CG, which is beyond our present scope. Nevertheless, we could perhaps speculate that *hina* in CG was in M (and perhaps raised to Op as well), by considering its interaction with modal particles. Notice that complementizer *hina* could not co-occur with the modal particle *an* (the marker of potentiality; this *an* is not historically related to the MG *an* (if) which derives from the complementizer *ean* (if) > *an*). This must have been an idiosyncratic property of *hina* and not of purposives in general, as the other typical purposive conjunction, namely *opo:s* could be followed by *an* (cf. Mandilaras 1973, §576, §591). It may be reasonable to assume that *an* occupied the lower C head (M) (based also on its interaction with other particles/conjunctions, cf. Arad & Roussou 1997). If this is correct, then we can account for the complementary distribution between *hina* and *an*, on the basis that they both realized the same position, that is, M.[5]

A second piece of evidence comes from later texts where we find *na* co-occurring with *oti*, as shown in the following example cited in Horrocks (1997:278):

(18) k' elpizo sto eleos tou Theou *oti* *na* eftixisis
and hope-1sg in-the mercy the God that prt succeed-2sg
'and by the mercy of God, I hope that you will succeed.' (Chronicle of Morea, 1389, early 14th century)

5. According to Liddell & Scott (1968:830) only adverbial (pronominal) *hina* can be followed by *an*, final *hina* cannot. This could be accounted for on the basis that *hina* in the former case was a D(P) element which occurred in a higher position (presumably a specifier) in the C domain. In other words, the distinction between C and D can account for this difference in their distribution.

In this example *na* is preceded by *oti*. Moreover, the *na*+V construction yields an irrealis ('future') interpretation. At this period, subjunctive is already grammaticalized in the C system in the form of *na*. What is relevant is the fact that *na* and *oti* are not in complementary distribution, unlike the current situation in MG.

On the basis of the above evidence, we could assume that *hina* and its medieval descendant *na* were in M, in the sense that *hina/na* was primarily specified for the features associated with M, and perhaps raised to Op. The presence of *oti* in examples like the one in (18) blocked raising of *na*, which was then restricted to M. The innovation would be that *na* came into competition with *oti* (presumably through its widespread use in complement clauses).[6] This competition led to the complementary distribution attested in MG. Recall also that in MG *na* is directly merged in Op, that is, it does not spell out M, when negation *min* is present. As argued above, *min* is the element that spells out not only Neg but M as well, thus restricting *na* to Op. What we find in MG is a kind of an intermediate situation where *na* can be either directly merged in Op or raised to that position, depending on whether negation is present or not. In other words, regarding the realization of Op by *na* we have a system where both Merge and Move are possible. Whether the change will lead from Move/Merge to Merge only is very hard, if not impossible, to predict, and in fact not relevant. The availability of both Merge and Move for the same lexical item for the same feature in the grammar of MG is syntactically determined, depending on whether negation is present or not.

To conclude the discussion so far: in this section we have presented an account of *na* in MG, setting the record of its development from the complementizer *hina*. The suggested structure of the left periphery will also be used as the background in the following sections where we discuss *mu* and *to*. We have shown that reanalysis of *na* does not involve any obvious changes in categorial status (unlike those cases discussed in Chapter 2). At the same time it can still be taken as an instance of grammaticalization to the extent that features which were previously associated with a lower functional head (I) have now become part of a lexical item in the C system.

6. Alternatively, one could say that *hina* originally occurred in Op (or even in the highest C). The availability of *oti na* sequences would in this case have to be attributed to *oti* occurring in the highest C (subordinator) during this period. In other words, the earlier structure would be as in (i) below:

(i) $[_{C}\ \textit{oti}\ [_{Op}\ \textit{na}\ [_{M}\ [_{T} \ldots]]]] > [_{C}\ [_{Op}\ \textit{oti/na}\ [_{M}\ t_{na}\ [_{T} \ldots]]]]$

In the absence of any conclusive empirical evidence it is hard to decide between the two alternatives.

3.2 From adverb to particle: Southern Italian **mu**

3.2.1 The properties of **mu**

In this section, we analyse the development of the *mu* complementizer found in Southern Calabrian and North-East Sicilian dialects of Italian. As we will see, *mu* shares many properties with Greek *na*, and this has been attributed to a Greek substrate (see Rohlfs 1969:104f. and the references given there; for a different view, see Ledgeway 1998 and Trumper 1997:354–355). The process of grammaticalization, even if triggered by contact with Greek, must nevertheless have been slightly different from the grammaticalization of *hina* to *na* discussed in the previous section, if the hypothesis presented below regarding the origin of *mu* is correct.

Before looking at *mu* itself, two general observations regarding complementation patterns in Southern Italian dialects must be made. First, in an area 'from Sicily up to Abruzzo' (Rohlfs 1969:190), there is a double series of complementizers where Standard Italian and other Romance varieties (except Rumanian) only have one. The first, *ca* (< Latin *quia*, the neuter plural of *quis* (Ernout & Thomas 1953:155)), is found in the complements to verbs of saying, thinking, etc.; Ledgeway (1998:20), following Calabrese (1993), points out that the tense of such complements is free, that is, independent of the temporal reference of the main clause. The second, *che* (in various forms in different dialects), introduces clauses with an anaphoric temporal interpretation and an unrealized reading in relation to the superordinate clause. These correspond to infinitives in Standard Italian and most other Romance varieties. The two complementizers are illustrated in (19) (from Rohlfs 1969:190):

(19)	*Standard Italian*:	penso **che** verrà	voglio **che** lui mangi
	Sicilian:	pensu **ca** vèni	vògghiu **chi** mmanciassi
	Sicilian of Messina:	critu **ca** vèni	ògghiu **mi** vèni
	S. Calabria:	pensu **ca** vèni	vogghiu **mu/mi** mangia
	N. Calabria:	criju **ca** vèni	vuogliu **chi** mmangia
	Salento:	crisciu **ca** vène	ogghiu **cu** mmancia
	Naples:	pènsə **ca** vènə	vògliə **chə** mmangə
	N. Puglia:	pènsə **ca** vènə	vògghiə **chə** mmangə
	Abruzzo:	pènsə **ca** venə	vòjjə **che** mmangə
		'I think he'll come'	'I want that he come/eat'

The second point is that, in approximately the same area, infinitives are highly restricted in distribution, occurring only in complements to obligatory restructuring verbs and here with obligatory control, and in these varieties, obligatory

clitic-climbing:

(20) a. ‘o vulimmo vedé
him want-1pl to-see
‘We want to see him.’
b. ‘o jamm’ a chiamma
him go-1pl to call
‘We’re going to call him.’ (Neapolitan; Ledgeway 2000:83)

Ledgeway (2000:82f.) analyses such examples as monoclausal; this is consistent with Wurmbrand’s (1998) general characterization of ‘restructuring infinitives’ cross-linguistically.

However, in Southern Calabria (south of the Nicastro-Catanzaro-Crotone line), an area of North-East Sicily around Messina and in Salento south of the Taranto-Ostuni line, infinitives are rare, although not impossible, in all contexts (Rohlfs 1969:102–106); in Salentino *ku*, in Calabria *mu*, in North-East Sicily *mi* and in Catanzaro *ma* are available in place of infinitives in all contexts (cf. also Manzini & Savoia, forthcoming, for a detailed account of these dialects, and Calabrese 1993, Damonte 2002 on Salentino *ku*). (We follow Rohlfs 1969, §789:192–193 in treating *mi* and *ma* as analogical developments on the basis of *chi* and *ca*.) This is the fundamental parallel with Modern Greek (and other Balkan languages), which may support the postulation of substrate influence. The *mu/mi/ma* alternations are phonologically determined and, as noted above, are subject to dialectal variation. Below we simply list the main features of *mu* (and its variants). The very clear similarity with Modern Greek *na*, as described in the previous section, can be easily observed.

First, *mu* appears in all contexts where Standard Italian has an infinitive, as already mentioned (Rohlfs 1969:104) (we gloss *mu/mi* as ‘prt’ for particle in order to be consistent with the glossing given for *tha/na*):

(21) a. *Causative complement*:
Dassati *mu* li cuntu.
Let-2pl prt them count-1sg
‘Let me count them.’
b. *Complement to ‘want’*:
iddu vulía *mi* vegnu
he wanted prt come-1sg
‘He wanted me to come.’
c. *Complement to impersonal*:
basta *mi* vaju
is-enough prt go-1sg
‘It suffices for me to go.’

d. *Complement to object-control verb*:
ti dissi *mu* vèni
you said-1sg prt come-2sg
'I told you to come.'

e. *Complement to noun*:
Non appi coraggiu *mi* l'ammazza.
not have-2sg courage prt him kill
'You don't have the courage to kill him.'

f. *Complement to adjective*:
Era buona *mi* nci lu trova.
was good prt there him finds.
'It was good to find him there.'

g. *Complement to temporal preposition*:
Prima *mi* mangiati dassatimi diri ammenu tri paroli.
Before prt eat-2pl let-me say-1sg at-least three words
'Before you eat let me say at least three words.'

The ability of a *mu*-clause to appear wherever an infinitive appears in Standard Italian implies that these clauses are able to appear in subject-control contexts. In other words, in these varieties there is no disjoint reference requirement holding between the matrix subject and the subject of a complement subjunctive clause (compare Standard Italian **voglio che io mangi*; French **je veux que je mange*, both 'I want that I eat', etc.). This property is unique to the *mu*-dialects and to *ku*-clauses in Salentino (Calabrese 1993, Damonte 2002) (although a well-known property of Greek *na*-clauses, and of Balkan languages in general; see Farkas 1992, Terzi 1992, Dobrovie-Sorin 2001, Krapova 2001, Roussou 2001):

(22) a. volimu *mu* mangiamu
want-1pl prt eat-1pl
'We want to eat.'

b. voliti *mi* veniti?
want-2pl prt come-2sg
'Do you(pl) want to come?'

c. volèra *ma* fazzu
would-like-1sg prt do-1sg
'I would like to do (it).'

d. non sapi *'u* scrivi
not know-3sg prt write-3sg
'S/he doesn't know how to write.'

Second, *mu* is able to form a kind of compound with *chi, per* (for) and *non*:

(23) a. Stativi attenti *nommu* caditi.
Be-2sg careful not-prt fall-2sg
'Be careful not to fall.'

b.

Vònnu	*pemmi*	vindu
want-3pl	for-prt	sell-1sg

'They want me to sell.'

c.

Chimmu	ti	viu	riccu	contentu.
that-prt	you	see-1sg	rich	happy

'May I see you rich and happy.'

d.

Chinnommu	cadi	mai	malatu!
that-not-prt	fall-3sg	ever	ill

'May s/he never fall ill.'

Significantly, the order is *chi/per* > *non* > *mu*, as these examples illustrate. Here we observe a difference with *na*, which precedes the non-finite negator *min* (see (3b) above), and which is in complementary distribution with *oti* (which is basically equivalent to *chi* in these varieties). Recall that the Greek facts were captured by positing M-to-Op raising (cf. (7b)); so we can simply observe that this raising option in not found in Calabrian.

Third, *mu* follows the interrogative complementizer *si*, as examples like the following (from Ledgeway 1998:30) show:

(24)

non	sacciu	*si*	*mma*	vegnu	o	menu
not	know-1sg	if	prt	come-1sg	or	not

'I don't know whether I should come or not.'

This is a further difference from Modern Greek, where *an* (if) is in complementary distribution with *na*.

Fourth, *mu* consistently follows an overt preverbal subject (since these are null-subject varieties, subjects are allowed not to appear overtly and may appear in the postverbal 'free-inversion' position) (see Ledgeway 1998:24):

(25) a.

vogghiu	lu	diavulu	*mu*	ti	mangia.
want-1sg	the	devil	prt	you	eat-3sg

'I want the devil to eat you!'

b.

*vogghiu	*mu*	lu	diavulu	ti	mangia.
want-1sg	prt	the	devil	you	eat-3sg

c.

ma	jeu	*nommu*	mi	tradu	rispundìa
but	I	not-prt	me	betray	replied-1sg

'but so that I would not betray myself' (Polistena; Scappatura 1992:137, cited in Ledgeway 1998:24)

According to Lombardi (1997:213–214), Rohlfs (1969:193) and Sorrento (1951:370), only pronominal clitics can appear between *mu* and the

verb, *mu* being phonologically part of the clitic cluster.[7] This is shown in (26):

(26) a. Ave 'a possibilità, doppu tuttu, *mi* staci a la casa
has the possibility after all prt stay-3sg at the house
'He can, after all, stay at home.'
b. *Ave 'a possibilità *mi*, doppu tuttu, staci a la casa
has the possibility prt after all stay-3sg at the house
(Lombardi's (55a), p. 213)

Fifth, the complement verb is always and only present indicative; there is no sequence-of-tense rule (Sorrento 1951:387, Ledgeway 1998:34):

(27) a. passai senza mi ti viju
passed-2sg without prt you see-1sg
'You passed without me seeing you.'
b. Volia pe *mi* si spusa.
wanted-3sg for prt self marry-3sg
'S/he wanted to get married.'
c. Non facìa autru ca *mi* ciangi.
not did-3sg other than prt cry-3sg
'S/he did nothing but cry.'

A relevant point in this context is that the present subjunctive is absent in most Southern Italian varieties (Rohlfs 1969:61–62), and the imperfect subjunctive is apparently absent in the *mu/mi* varieties. In other words, we see that *mu*-clauses pattern like their *na*-counterparts in MG with respect to this property as well (i.e. absence of morphological subjunctive).

Sixth, where the selecting predicate is semantically compatible with both an epistemic and an unrealized meaning, the choice of *mi* versus *ca* clearly illustrates that *mi* carries the irrealis feature (see also the examples in (4) from MG):

(28) a. Dinnu a Maria *mi* si ndi vaci.
Tell-3pl to Maria prt self of-it go
'They tell Maria to leave.'

7. Adam Ledgeway (personal communication) informs us that this is not true in the dialect of Saveria-Manelli (province of Catanzaro), as shown by the following, where the subject *'u nidu* intervenes between *mu* and the proclitic + finite verb *se rende*:

(i) è magliu mu 'u nidu se rende cchiù comitu
it-is better MU the nest self make more comfortable
'It's better for the nest to be made more comfortable.'

This variety is transitional between Northern and Southern Calabria, and so here it seems that *mu* appears with the syntax of *che*.

b. Dinnu a Maria *ca* si ndi vannu.
Tell-3pl to Mary that self of-it go.
'They tell Maria that they are leaving.'

The distributional features of *mu* just illustrated, and its dual nature as a complementizer and an irrealis particle, can be captured in terms of the kind of structure put forward for Modern Greek *na*-clauses in (9) above:

(29) $[_{\text{CP}}\ [_{\text{OpP}}$ *chi/pe* $[_{\text{NegP}}$ *no* $[_{\text{MP}}$ *mu/mi* $[_{\text{TP}} \ldots]]]]]$

Here *mu/mi* marks M as irrealis, that is, it spells out the irrealis feature associated with M, in a way similar to *na* (and *tha*) in MG. While *na* in the absence of negation always raises to Op, *mu* is slightly different, as it can only raise to Op provided no other element is present in that position. In other words, *mu* is not in competition with *chi/si*, while *na* is in competition with *oti/an*. What the two particles have in common is the fact that they spell out M. In the relevant Italian dialects this is done exclusively by *mu/mi*, whereas in MG it could be done by negator *min* as well in which case *na* is directly merged in Op.

We assume that preverbal subjects occupy a topic position higher than MP (recall that MP corresponds to Rizzi's (1997) FinP, and that Rizzi places TopP higher than FinP). A well-known property of null-subject languages is that preverbal subjects do not occur in the canonical subject position (SpecTP), but are topics (cf. Philippaki-Warburton 1987, Alexiadou & Anagnostopoulou 1998 for MG; Manzini & Savoia 2002 for Italian, among others). Like MG *na, mu* appears to mediate both temporal anaphora and control relations between the higher and the lower clause (the two elements are alike in blocking clitic-climbing, presumably because the clauses containing them are formally finite). More precisely, these elements morphophonologically instantiate the features which are responsible for such relations, among them the irrealis feature; in other types of systems infinitival or subjunctive verbal inflection marks such features (cf. the close comparison between *mu*-clauses and the Old Neapolitan inflected infinitive in Ledgeway 1998:41ff., to which we briefly return below).

3.2.2 The development of ***mu***

According to Sorrento (1951:394), *mu* is the regular unstressed form of *mo*, which derives from the Classical Latin adverb *modo* ('as long as', 'just', 'only', 'in this way') in Calabrian. This adverb, which in turn derives from the ablative of *modus* ('manner', 'way'), had various modal uses in Latin, where it co-occurs with the subjunctive, as in the following cases:

(30) a. Haec studia non improbo, modo moderata sint. (Cicero)
these studies not disapprove-1sg modo limited are (subjunc)
'I do not disapprove of these studies, as long as they are limited.'

b. dum illum modo habeam mecum
while him modo have-1sg(subjunc) me-with
'as long as I have him with me' (Ernout & Thomas 1953:391)

c. modo ut sciam
modo that know-1sg(subjunc)
'if only I knew' (Plautus)

d. modo ut tacere possis
modo that be-silent could-2sg(subjunc)
'if only you could be silent' (Terence, *Phorm.* 59)

e. vos modo, inquit, partite
you modo, said-3sg, leave
'You now, he said, leave.'

f. veniat modo
come-3sg modo
'May he come/let him come now'

In (30a, b), *modo* combines with the subjunctive to express the non-factive interpretation associated with the sense of 'as long as'. In (30c, d), in combination with *ut*, the interpretation of the clause introduced by *modo* is counterfactual, as the translation indicates. In (30e), it appears to act as a discourse particle associated with the imperative. In (30f), it has a similar interpretation in association with an optative subjunctive.

We can see from these examples that it is in combination with *ut* that *modo* most clearly has a modal interpretation, which anticipates the present-day Calabrian *mu* as analysed in the previous section. On this point, Sorrento (1951:389) comments as follows: '*Modo*, then, when it was combined with *ut*, reinforced this conjunction and was often found in the position or function of the conjunction' (IGR's translation).

If we take *modo* to be an AdvP, and *ut* to occupy the Mood position, taking TP as its complement (this is in fact the lowest possible position for Latin *ut*), then we plausibly have the following structure as regards these elements of the Latin C system:

(31) $[_{CP}$ *modo* C $[_{NegP}$ $[_{MP}$ *ut* $[_{TP} \ldots]]]]$

(Note that NegP might have been occupied by *ne* ('lest') the negative counterpart of *ut*. Such an analysis would imply that *ne* raises from M to Neg, parallel to Modern Greek *min* as analysed in the previous section. It is possible that *modo* was in SpecOpP, but this does not affect our discussion.) Example (31), we

suggest, is the Classical Latin structure that developed into the present-day Calabrian (29). We return to this point below.

The *mu* particle is usually distinguished from the adverb *mo* (now), which is found in Calabrian and elsewhere:

(32) a. mo vieni.
now come(sg)
'now come'
b. vieni mo.
come now
'come now'

This element appears to correspond exactly to the Latin *modo* of (30e). However, it differs from *mu* in two respects: (i) it is a stressed form (hence *mo* rather than *mu*); (ii) it is not obligatorily preverbal, unlike *mu*, as (32b) illustrates.

It is interesting to note that a similar situation is attested in MG. Apart from the modal particle *na*, we also find deictic *na*, which roughly translates as presentational *there*, as in the following examples:

(33) a. Na o Petros/na tos!
there the Peter/there he
'There is Peter/there is he!'
b. Na o Petros erxete!
there the Peter come-3sg
'There is Peter coming.'

Unlike the modal particle, deictic *na* can be stressed, and can occur on its own (*na!* = *there*) (accompanied by the relevant deictic gesture). It is possible that the two *na* in MG have a different historical origin, as it has been argued that deictic *na* originates from the CG deictic expression *e:ni* > *e:n* (cf. Andriotis [1983] 1990 for references regarding this etymology). Synchronically, Joseph (1981, 1994) has analysed deictic *na* as an element akin to a verbal predicate, distinct from the modal particle *na*. On the other hand, Christidis (1985, 1989) argues that even if the two *na* have a different origin (which is nevertheless dubious), synchronically they appear to be semantically related in the sense that both elements are associated with some sort of deixis. According to his analysis, they differ in that modal *na* has an 'endophoric' deixis, while deictic *na* is 'exophoric'. Endophoric means that the object of deixis is the proposition itself, while exophoric means the object of deixis is located in the outside world. If this is correct, then we could argue that there is only one *na* which surfaces as either deictic or modal depending on the complement it takes. It may then be possible to make a similar claim about presentational *mo* versus modal *mu*

(and its variants) in the Italian dialects under consideration. We will come back to this issue when we discuss infinitival *to* in English and its relation to the locative preposition *to*.

Going back to the properties of *modo*, notice that examples in (30c, d) are main-clause optatives in *modo ut*. As such they correspond exactly to Modern Calabrian examples such as the following with *mu/mi/ma* (cf. also the imprecations in (25)):

(34) a. *mi* vèni nuddu
prt come no one
'May/let no one come'
b. *ma* mòra
prt die-3sg
'May s/he die'

Comparing (30c, d) with (34), we can see how *mu* emerged: the AdvP *modo* was reanalysed as M, with corresponding phonological reduction (recall that *mu* must be unstressed) and semantic bleaching, in that *mu*'s present function seems to be as a marker of irrealis M, whereas *modo* had a somewhat richer range of meaning in Latin, as (30) shows. We thus observe the familiar pattern of phonological reduction, syntactic reanalysis and semantic bleaching.

We can illustrate the proposed changes in the C system from Latin to Calabrian as follows:

(35) $[_{CP}$ *modo* C $[_{NegP}$ *(ne)* $[_{MP}$ *ut* $[_{TP}$ ... > $[_{CP}$ *chi/pe* $[_{NegP}$ *no* $[_{MP}$ *mu/mi* $[_{TP}$ ...

(35) shows that the parametric property of M may not in fact have changed: in Latin M^*_{Merge} was realized by *ut*, while in Calabrian it is realized by *mu*. Whether there was an intervening parametric change is impossible to tell, given the paucity of records. If Ledgeway (1998:51) is correct in suggesting that the Old Neapolitan inflected infinitive was functionally equivalent to Calabrian *mu*-clauses, then the inflected infinitive may have represented an instance of M^*_{Move} (that is, M is spelled out by movement) given the following correspondence (adapted from Ledgeway *ibid*.; see also Lombardi 1997, Chapter 3):

(36) a. V-root M Agr
canta- re- mo (Old Neapolitan)
b. M V-root Agr
mu canta (Calabrian)

The obvious way to capture the difference shown here is by positing V movement to Agr in Calabrian (and cf. the above discussion of the null-subject

parameter in this variety) and V movement to M in Old Neapolitan. In other words, Old Neapolitan had M^*_{Move} in this construction, while Calabrian has M^*_{Merge}.

Like the other cases of grammaticalization we have seen, the change from AdvP *modo* to M-marker *mu* involves structural simplification, in that the earlier AdvP occupying the Specifier position of a higher head in the C system was reanalysed as M. In this way, the structure after the change is simpler than the earlier structure, as the new structure has one less structural position. We can also observe a similarity with the reanalysis of *hina* as *na* discussed in the previous section: Latin had a highly productive subjunctive mood, which in fact survives in many modern Romance languages, for example Standard Italian, but which was lost in various Southern Italian dialects, including Calabrian. So we can think of the change affecting *mu* along the lines of (16) above: mood features are diachronically transferred from T to M as a consequence of the loss of inflection. In this sense the change is once again an 'upward' one.[8] We are not in a position to say when this change took place in Calabrian owing to the paucity of the data.[9] What is crucial though is that the grammaticalization of *mu* as a modal marker essentially marks the grammaticalization of mood features in the C system.

3.3 The infinitival marker **to** *in English*

3.3.1 The properties of ***to***

In this section we will compare English *to* synchronically and diachronically with *na* and *mu*. We will point out that *to* shares a striking number of properties

8. Of course, it remains the case that *modo* has diachronically lowered. We can avoid this difficulty by saying that *modo* occupied an adjunct position as a modifier of CP, and was thus outside the C system, as in:

   (i) [modo] [$_{CP}$ ut [. . . . .]]

   The structural simplification would then have clearly involved the loss of this adjunction structure with the result that *modo* became associated with a head in the C system.

9. Calabrese (1993) argues that Salentino *ku* developed the characteristic properties that distinguish it from Standard Italian and much of the rest of Romance, which are very similar to those of *mu/mi* discussed above, under the influence of Byzantine Greek in the fifth–eleventh centuries. He suggests that the changes affecting *ku* could not have happened earlier because Salentino shares the main Romance innovations in complementation with all the other Romance languages: the loss of gerunds, supines, *ut, ne* and the accusative + infinitive construction, and the extension of *quod*-clauses as the principal means of finite complementation. The same can be said of Southern Calabrian, suggesting at least that the development of *mu/mi* is a later innovation, although we cannot comment on the role of Byzantine Greek in this case.

with these other particles, and, partly on the basis of these observations, develop an analysis according to which *to* appears in M. We will show how this analysis captures a number of properties of NE *to* (see also Rosenbaum 1967, who calls *to* a complementizer, and Kayne 2000 who also points in this direction; for empirical justification see Lencho 1992 and the discussion that follows). We then go on to show that the diachronic development of *to*, as described in Los (1999), is also similar in many respects to that of *na* and *mu*: mood features are realized (overtly) in a 'higher' position after the change than before; the loss of subjunctive and infinitival morphology plays an important role, and certain adjuncts develop into complements.

It can immediately be observed that NE *to* shares five important properties with *na* and *mu*: (i) it occurs in control infinitives; (ii) it can combine with the higher complementizers *for* (only in non-standard varieties of NE (see Henry 1995 on Belfast English, for example)) and *whether* (see Kayne 1991 for discussion and analysis of why it does not co-occur with *if*); (iii) it appears in main-clause optatives; (iv) it obligatorily follows an overt subject; (v) under the right kind of predicate, it contrasts with *that*-clauses (and gerunds) regarding the entailment as to whether the event referred to by the embedded clause took place. These properties are illustrated in (37):

(37) a. I want to write.
b. i. I came (for) to work.
ii. I don't know whether to go or not.
c. Oh to be in England!
d. i. We believe John to/*to John be the winner.
ii. For John to/*to John be the winner . . .
e. i. John remembered that he had posted the letter.
ii. John remembered posting the letter.
iii. John remembered to post the letter.

These examples should be compared with (22–24), and (28) in the previous section. Note that in (37e, i–ii) the entailment is that the letter has in fact been posted, while in (37e, iii) the entailment is that at the past time denoted by the main clause, the letter had not been posted.

Furthermore, it is possible to maintain that *to*-infinitives are like MG *na*-clauses and Calabrian *mu*-clauses in being able to co-occur with a negation in the C system. This can be seen if we observe first that *to* can apparently appear on either side of clausal *not*, as is well known, and, second, that *not* cannot contract onto *to*:

(38) a. Not to/to not leave would be a shame.
b. *Ton't leave would be a shame.

Third, only contractible negation triggers *do*-support:

(39) a. John *(does) not eat pizza.
b. To (*do) not eat pizza . . .

We can account for these facts by adopting a structure like the following in the relevant respects:

(40) . . not . . [$_{IP}$ . . T . . [. . n't . . [$_{VP}$ . . V . .]]]

As (40) shows, the contractible negation appears subjacent to T; it may optionally raise to T, hosting auxiliary movement from a lower head and possibly moving further with the auxiliary. This negation is also responsible, in virtue of its position in between T and V, for blocking the V-T relation and thus triggering *do*-support (however exactly this may happen). The non-contractible negation, on the other hand, is merged outside the I system in C and so neither raises nor triggers *do*-support. This analysis makes possible a very simple statement of the condition on *not*-contraction, namely that it takes place only where T has phonological content. In this respect, this analysis is superior to more standard ones, which usually state the condition on contraction in terms of finiteness, as it correctly predicts that contraction is impossible in subjunctives:

(41) We require that you *n't/not eat pizza.

Here T is finite, but phonologically empty, and contraction is not possible.

In terms of the analysis of negation just presented, we are led by the impossibility of *not*-contraction onto *to* to postulate that *to* is not in T. Instead, consistent with the observed similarities with *na* and *mu*, we suggest that *to* occupies M. Given that it can precede non-contractible negation, we must assume that it optionally moves from M to a higher C head (or, as in the case of *na*, that it can be directly merged above M, allowing for negation to spell out M).

Lencho (1992) gives two further arguments to analyse *to* as occupying C (or, in our terms, a position in the C system). First, he observes that *to*-clauses and *that*-clauses behave uniformly regarding deletion, suggesting that the deleted category is IP in both cases:

(42) a. TA's wish that they were paid better, and adjuncts wish that [$_{IP}$ e] too.
b. *TA's wish that they were paid better, and adjuncts wish [$_{CP}$ e] too.
c. TA's need to be paid better, and adjuncts need to [$_{IP}$ e] too.
d. *TA's need to be paid better, and adjuncts need [$_{CP}$ e] too.

Second, he points out that *to*-clauses and *that*-clauses behave uniformly regarding movement, suggesting that the moved category is CP in both cases:

(43) a. His kids watching too much TV, John dislikes.
b. *That kids watch too much TV these days, John worries.
c. *(His kids) to watch too much TV these days, John hates.

These observations support our contention that *to* is in M.

In addition to the considerations raised here, Kayne (2000:297ff.) observes two similarities between *to* and Romance *de/di*. First, none of these elements can be selected by a preposition:

(44) a. *Gianni contava su di vincere.
b. *Jean comptait sur de gagner.
c. *John counted on to win.

Second, none of these elements can be small-clause subjects:

(45) a. *Gianni ritiene di vincere possibile.
b. *Jean considère de gagner possible.
c. *John considers to win possible.

Since *de/di* have always been regarded as C elements in Italian and French (see Rizzi 1997 for a recent discussion), this supports the idea that *to* is also in that system (whatever the explanation for the restrictions in (44) and (45) – see Kayne 2000 for a proposal). These observations further support our contention that *to* is in M. In other words, the infinitival marker *to* is not a T element, or to be more precise it is not an auxiliary-like element *pace* Pullum (1982) (for a recent summary of the arguments for the T status of *to* see also Radford 1997, Chapter 2).

There is one major difference between *to* and *na/mu*. Unlike *na* and *mu, to* is able to be separated from the main verb by various elements, including adverbs of various types and negation:

(46) To **deliberately not readily** admit to this difficulty would be wrong.

This difference can be accounted for in terms of an independently observable difference between English on the one hand and MG and Calabrian on the other: main verbs do not raise in English while they do in MG and Calabrian (recall that the last two languages are null-subject languages, in which we assume that the inflected verb always raises to T).[10]

10. By the reasoning in the text, one might expect that auxiliaries appear closer to *to*, as these elements undergo *have/be* raising. This is not true, however, in that *have* and *be* can follow the entire sequence of adverbs and negation in (46):

(i) To **deliberately not readily** have admitted to this difficulty would have been wrong.

But in this connection it should be borne in mind that we can treat the verb form in the *to*-construction as 'subjunctive', in that it is morphologically identical to the subjunctive, being

English, of course, differs from Modern Greek and Calabrian in not being a null-subject language. Subjects clearly must precede *to*, including expletive subjects, which also follow the higher complementizer *for*:

(47) For there to be life on Mars would be quite a discovery.

Example (47) illustrates an EPP effect, which must hold at a level higher than T. In fact, our analysis implies that non-finite T never has an EPP feature. In this we concur with Manzini and Roussou (2000), Castillo, Drury and Grohmann (1999) and Nosu (2002), all of whom argue, based on different assumptions, that there is no SpecTP position in standard cases of raising and control, and therefore the EPP does not apply in these clauses. This conclusion is clearly just as valid for SpecMP as it is for SpecTP. In *for*-clauses and ECM (Exceptional Case Marking) clauses, on the other hand, an EPP effect can be observed in that expletives are obligatory. This is shown by examples like (47) above and (48):

(48) We believe there to be life on Mars.

As (49) shows, adverbs can intervene between *there* and *to*, which implies that there is no EPP effect in SpecMP here either:

(49) a. For there always to be a problem when John is here is a nuisance.
b. We believe there always to be a problem.

We conclude that *to* is in fact like *na* and *mu*, then, in not being associated with an EPP feature. Since English verb-inflection does not satisfy the EPP in T (i.e. English is not a null-subject language), we conclude that there simply is no EPP effect associated with non-finite T or M in English. Alternatively, we could say that the realization of M by a modal particle blocks the realization of the agreement features of T (or of a separate Agr). This looks like a minimality effect, but it still remains to be elaborated how exactly this is achieved (we leave this open in the present context). If the subject cannot be realized in the I domain, that is, there is no EPP associated with T, then an overt subject could appear in a peripheral position. Indeed an overt subject is possible with *to*-clauses, albeit in a position that precedes *to*, as shown in (49). Crucially though the EPP effect observed in (49) must be associated with a higher head: it is induced by the selecting head – *for* or an ECM verb – in a way that remains

just the bare form of the verb. In subjunctive clauses introduced by *that, have/be* raising is not allowed, as is well known. The same idea will account for the complementary distribution of modals and *to*; modals are not allowed in subjunctive clauses introduced by *that* (perhaps because T is filled by an operator – see Culicover 1976), and so, possibly for the same reason, they are not allowed in 'subjunctive' clauses introduced by *to*.

unclear, but which suggests a connection with Case, especially in the light of the fact that complements to passivized ECM verbs do not show this effect, as has been observed since Rosenbaum (1967).[11]

On the other hand, we retain the standard view that finite T has an EPP feature in English, and that subjects of finite clauses are in SpecTP. It follows that we are taking subjects of finite clauses to be in a lower position than the subjects of ECM and *for*-infinitives. As is well known, just this has been argued for ECM contexts by Lasnik and Saito (1991). In fact, Lasnik and Saito show that the subjects in ECM and *for*-complements (as well as other complements to W-verbs, in the sense of Postal 1974) are in different positions, with the former being structurally higher than the latter, on the basis of contrasts like the following (these are Lasnik & Saito's judgements, which are not actually shared by all native speakers, who find the examples below equally bad):

(50) a. ?*I wanted very much for those men to be fired because of each other's statements.
b. ?I believed those men to be unreliable because of each other's statements.

Following Postal (1974), Lasnik and Saito argue that the subject of the ECM infinitive in (50b) is raised out of the infinitive clause. Owing to this raising operation, the subject *those men* in (50b) is able to c-command the anaphor *each other* in the main-clause adjunct. In (50a), on the other hand, the subject remains inside the infinitival clause, and is thus unable to bind *each other* in the adjunct clause. There is nevertheless one piece of evidence that this subject position in *for*-infinitives is higher than the subject position of finite clauses: adverbs of various kinds can intervene between *that* and the subject in a finite clause, but not between *for* and the subject in a *for*-infinitive. This fact is illustrated by the contrasts in (51):

(51) a. *For tomorrow John to leave would be a shame.
b. We said that tomorrow John would leave.

Adjacency conditions on Case-assignment/checking cannot explain this distinction since (a) it is doubtful that such conditions exist and (b) if head government is not part of the theory, *for* cannot be assigning/checking the Case of *John* in

11. The existence of an EPP effect in ACC-*ing* gerunds, shown in (i), suggests that there may be more going on than this:

(i) There being life on Mars surprised us all.

We leave this question open. For an analysis of ACC-*ing* gerunds, see Roussou and Roberts (2001).

(51a). Moreover, the fact that no adverb can appear to the left of *for* with scope over the *for*-clause shows that *for* is not lower than *that* (cf. McCloskey's (1996) Adjunction Prohibition):

(52) a. *[In general for John to know what's going on] is a surprise.
b. *[In general that John knows what's going on] is a surprise.

From the above arguments, we conclude that NE *to* is considerably more similar to Modern Greek *na* and Calabrian *mu* than has usually been thought, in particular in that it occupies M, the lowest position in the C system. In the next section we turn to the history of this element.

3.3.2 The history of ***to****-infinitives*

In this section we analyse the development of the English *to*-infinitive. We will mainly follow the arguments and conclusions in Los' (1999) important and convincing account, but we will observe a number of important parallels with the diachronic development of *na* and *mu* as discussed earlier in this chapter, in particular as regards one aspect of the change.

The standard account of the development of the English *to*-infinitive treats it as having derived from a purpose clause containing a nominalized verb form which was the complement to the preposition *to*. This is proposed by Callaway (1913), Jespersen (1938), Campbell (1959), and, in a generative framework, Lightfoot (1979) and Jarad (1997). The principal evidence for this comes from (i) the etymology of infinitives as nominal forms, (ii) the dative ending *-ne* found on infinitives, (iii) the fact that OE *to*-infinitives are sometimes found conjoined with PPs and (iv) the more 'nominal' properties of ME infinitives as compared to those of NE, in particular their ability to occur in the complement of prepositions. In these terms, the categorial change directly explains the changes in the nature of both *to* (P > I) and the infinitive form (N > V); see in particular Lightfoot (1979) and Jarad (1997).

However, Los (1999, Chapter 11) criticizes the 'nominal' analysis of OE infinitives on several grounds. First, *to* was the only element that occurred with the infinitive, which casts some doubt on the status of this construction as an instance of a standard PP. Second, no other clearly case-marked forms of infinitives other than the etymological dative are found in OE, and these forms appear only where the infinitive is directly adjacent to *to*. Third, she points out that the coordination argument is not conclusive, in that it is clear that unlike categories can be coordinated (cf. *The minister was tired and in an angry mood after the debate*, etc.). Fourth, she shows that *to*-infinitives in fact only started appearing as complements to prepositions in ME.

Most importantly, she shows that *to*-infinitives appear with overwhelming frequency after the finite verb (in embedded clauses, controlling for the effects of V2), while 'bare' infinitives appear in pre- and postverbal position with more or less equal frequency. Similarly, *to*-PPs appear pre- and postverbally with almost equal frequency. These observations show that *to*-infinitives are not equivalent to *to*-PPs, and that *to*-infinitives are not equivalent to bare infinitives. Los observes that, while bare infinitives have a distribution similar to nominal complements, *to*-infinitives behave more like *that*-clauses. For these reasons, it is more plausible to treat OE *to*-infinitives as clauses than as PPs. Her main claim then is that *to*-infinitives were actually in competition with subjunctive *that*-clauses. The increase of *to*-infinitives in ME is due to the decrease of the subjunctive clauses. To some extent this is reminiscent of the situation in Greek and Calabrian: loss of the subjunctive morphology (along with infinitival morphology) led to the development of modal particles, that is, *na* and *mu* respectively.

Nevertheless, Los follows the traditional idea that *to*-clauses developed out of purpose clauses; she simply dates this development as having taken place much earlier (in prehistoric OE or even earlier in Proto-Germanic). She observes that Gothic and OE both allow three different expressions of purpose: with *to* (Gothic *du*) + nominalization, with *to/du* + infinitive and with the subjunctive introduced by OE *þæt* or Gothic *ei* (we will discuss the last-mentioned element more in the next section) (see also the CG data in (10) and (12)). These parallels are illustrated in (53–55) (Gothic examples cited from Köhler 1867:451):

(53) *du/to*+PP:

a. þata waurkjaiþ . . . du meinai gamunai (Gothic)
this do . . . to my remembrance
'do this as a memorial to me' (1 Cor. 11.24–25)

b. Sylle him aþ & ne nyde hine to gylde (OE)
give him oath and neg force him to repayment
'Let him swear an oath and do not force him to repayment'
(Exod. 22.14; in Los 1999:274)

(54) *that*+subjunctive:

a. ei meina gamunaiþ (Gothic)
that me you-remember(subjunc)
'so that you may remember me' (Köhler 1867:451)

b. nyde man hine þæt he hit gylde (OE)
force one him that he it repay
'he should be forced to repay it' (Exod. 22.10, in Los 1999:275)

(55) a. du gamunan meina (Gothic)
to remember me
b. nyd hi inn to farenne (OE)
urge them in to go
'urge them to go in' (Los 1998:5)

On the basis of these parallels, it seems reasonable to posit a common Germanic origin for the OE and Gothic constructions in a purposive adjunct PP, along the lines of the traditional analysis. By the OE period, however, *to*-infinitives were, like *that* + subjunctive clauses, already CPs (cf. Los 1999:257ff.).

Regarding the position of *to* in OE, Los argues that it was a clitic which attached to V (section 7.4.3). In that respect it had a status similar to that of the subjunctive affix and could be licensed only by covert feature checking (with T). This analysis then suffices to explain the strict adjacency between *to* and the verb in OE. Notice though that there is an alternative approach in the light of the proposals we made in this chapter. Recall that nothing can intervene between *na/mu* in M and the verb (unless the intervening element is a clitic). NE *to* differs, as it allows for intervening adverbs, but still shows no EPP effects. The difference between *na/mu* and NE *to* was attributed to the fact that NE, unlike MG and Southern Italian, shows no V movement. The adjacency then between OE *to* and the verb can be accounted for along the lines of *na/mu*+V, allowing us to claim that *to* at this stage was already in M. If we assume that OE infinitives raised to T, and overt subjects were not possible in SpecTP of infinitives, then if *to* appeared in M it would be systematically adjacent to the infinitive.[12] We thus propose the following reanalysis of adjunct purposives to *to* and *that* + subjunctive complements:

(56) VP $[_{\text{PP}}$ *to* $[_{\text{DP}}$ V + *enne*]] > $[_{\text{VP}}$ V $[_{\text{CP}}$ $[_{\text{MP}}$ *to* $[_{\text{TP}}$ $[_{\text{T}}$ V+*enne*]]]]]

Here, placing the PP outside VP and the CP inside VP is intended simply to indicate the change from adjunct to complement. The reanalysis from adjunct to complement took place in the complement to verbs of the relevant type (e.g. verbs of command, as in (53–55)); after the reanalysis, *to*-purposives with the structure on the right-hand side of (56) were still found. This reanalysis should be compared with that in section 3.1 affecting *(h)ina* in Hellenistic

12. This analysis implies that complements which precede *to* must have raised out of the MP containing *to*, and probably out of the entire CP. This is consistent with what is proposed in analyses of OE word order inspired by Kayne's (1994) proposals (see Roberts 1997a, van der Wurff 1997, 1999, Hróarsdottir 1999). The fact that complements can move leftwards out of *to*-clauses but not out of *that*-clauses may support placing *to* and *that* in different positions in the C system (although it is difficult to see how to express this observation).

Greek (see also (31) and (29) in section 3.2 concerning the change of Latin *modo* to Calabrian *mu*).

The reanalysis in (56) captures the non-nominal properties of the OE *to*-infinitive noted by Los: only *to* was reanalysed, so in OE other prepositions did not co-occur with the infinitive, and the *-ne* ending was no longer a true dative inflection. Unlike the traditional analysis described above, we take the weakening of nominal inflections to be the cause of the reanalysis. Presumably at some prehistoric stage the nominalizations in purpose clauses appeared with other prepositions and in other case forms; at some point the paradigm was sufficiently defective for the nominal to be reanalysed as verbal and for the PP to be reanalysed as CP. The central mechanism at work in this reanalysis is the change in category of *to*, which may again be linked to case; once *to* is no longer a case-assigner, or more precisely once the case on the infinitive is no longer part of a productive case paradigm, it can no longer be a preposition, and so must be reanalysed as something else. At that point, it takes on the irrealis meaning component associated with purposives (cf. the discussion of purposives and modality in section 3.1), and is reanalysed as M. This implies that *to* changes meaning from its earlier purposive/directional prepositional content to a 'bleached' meaning as an irrealis marker – again, this has parallels with the changes affecting *na* and *mu* discussed earlier in this chapter.

Finally, the reanalysis in (56) was a structural simplification to the extent that adjuncts are more complex than complements. In X′-theoretic terms, this is true in the sense that the presence of an adjunct implies the presence of an extra segment of a projection, which a complement does not. We will return to the question of assessing the relative complexity of different structures in Chapter 5.[13]

During ME, two developments took place: the *to*-infinitive developed at the expense of *that*-clauses with the subjunctive and it became possible for material to intervene between *to* and the infinitive. Los (1999, Chapter 12) documents in detail how *to*-infinitives took over the distribution of *that*-clauses with the subjunctive in early ME. According to her analysis, in ME *to* shows signs of degrammaticalization in the sense that it stops being a clitic and becomes a free-standing morpheme. Syntactically, *to* starts moving to T overtly, thus

13. It may appear that the reanalysed structure in (56) is more complex than the earlier [$_{PP}$ P DP] structure, since it contains more nodes. However, this is due to the fact that we specify more of the internal structure of CP than of DP. It is plausible that the internal structure of DP is as complex as that of CP (see the references at the end of this section).

spelling out T. The trigger for this change in the categorial status of *to* has to do with the loss of the subjunctive morphology and the fact that subjunctive is being replaced by periphrastic expressions, namely a modal (e.g. *should* and *would*) which moves to T, followed by a verb. In other words, the trigger is morphological (no clear distinction between the indicative and the subjunctive) exactly as in the other two cases discussed before. In terms of our analysis, we can think of the modal content of the subjunctive inflection being 'transferred' to *to*, that is, changing in structural position from T to M, directly analogous to the change affecting the realization of mood features in Greek discussed in section 3.1 (see (16)). This kind of change is similar to the cases of 'upward' grammaticalization induced by loss of movement which we described in Chapter 2.

Second, as also shown in some detail by Jarad (1997), the obligatory adjacency of *to* and the infinitive disappears in ME. In particular, shifted pronominal objects and adverbs start to intervene linearly between the two elements. The following examples illustrate:

(57) a. he ne heþ mi3te to hit endi
he neg has power to it end
'He does not have the power to end it.'
(*Ayenbite of Inwit*, I, 113.252, cited in Los 1998:7)
b. the prestis ben forfended to enymore takyn monee of the puple
the priests are forbidden to anymore take money from the people
(Wyclif *Selected Works* II, 303; Visser 1960–1973:981, Jarad 1997:150)

This change receives a natural explanation in terms of loss of V-to-T movement. After this, the verb is in a position which follows the landing-site of object shift. It is important to note that this does not imply that the verb does not move at all in infinitives, and indeed Jarad (1997) gives evidence like the following, showing the order *(for)to–pronoun/adv–V* existed alongside the order *V–adv–object* at the same period:

(58) a. thy desire is forto witen overmore the forme of Aristotles lore
your desire is to know too much the form of Aristotle's traditions
(Gower *C.A.* 7.607; Jarad 1997:149)
b. whair I ane galland micht get aganis the nixt yeir forto perfurneis furth the work ...
where I one gentleman might get in-preparation-for the next year to perform further the work ...
'where I as one gentleman might get in preparation for the next year; to carry out the work further ...' (William Dunbar 84; Jarad 1997:150)

Presumably, infinitive-movement is altogether lost when the infinitival ending disappears at the end of the fifteenth century (see Chapter 2 and Roberts 1993a:261).[14]

Finally, as briefly mentioned in Chapter 2, section 1, *for* infinitives develop in ME. Jarad (1997) documents the rise of *for* as a complementizer (see also Lightfoot 1979:187), also from a purpose clause. Jarad also gives evidence that ME had a compound complementizer *forto*, which was subsequently lost. The NE *for NP to VP* construction appears from the sixteenth century (Fischer *et al.* 2000:214f., Lightfoot 1979:186ff., Roberts 1993a:259f.) and appears to have involved the reanalysis of an earlier benefactive *for*-phrase, as schematized in (59) (see also Jespersen 1909–1949 for an early reference):

(59) it is good [$_{PP}$ for me] [$_{CP}$ PRO to go] > it is good [$_{CP}$ for [me to go]]

It is unclear on present assumptions how this reanalysis was related to the loss of infinitive inflection on the verb (see Roberts 1993a:261 for an account based on the idea that *to* is in T), but in any case it may really be the result of the combination of the earlier *for-to* construction and an earlier construction discussed by Fischer *et al.*[15] Fischer *et al.* (2000) show how the reanalysis in (59) was facilitated by an earlier construction where a bare DP appeared as the subject of an infinitival, a development they claim was made possible by the loss of case distinctions, hence a formerly dative DP could be interpreted as a subject:

14. The account given here is compatible with what we said about the development of modals in Chapter 2, section 1. There, following Roberts (1993a), we proposed that the trigger for the reanalysis of the formerly biclausal structure containing a premodal and its infinitival complement as monoclausal was the loss of infinitival morphology in the lower clause, as this was the crucial cue for the presence of the lower TP. Implicit in that analysis was the idea that, as long as infinitives had morphology, they raised to T. However, we are not required to say this. The presence of an infinitive ending on V, even if V does not move to T, can be taken as an indicator of the presence of that T. Presumably the relation between non-finite T and the non-finite feature associated with the infinitive ending in this case is mediated by Agree in the sense of Chomsky (2000, 2001). Thus, the reasoning in Chapter 2 can be maintained unaffected even if infinitives no longer move to T by the fifteenth century: the presence of non-finite inflection was a cue for the presence of non-finite T and therefore of a biclausal structure with modals, independently of whether that V moved to T. Once the infinitive morphology is lost, there is no cue for the biclausal structure and the reanalysis discussed in Chapter 2 takes place.
15. Other changes brought about by the loss of infinitive inflection on the verb may be the loss of *let* causatives (*he let burn the city* – see Roberts 1993a:286f.), the loss of passive infinitives, the spread of certain kinds of ECM constructions (Fischer *et al.* 2000:220ff.) and the related development of the A'-dependency in *easy-to-please* constructions (Fischer *et al.* 2000:261ff.). Interestingly, the second and third of these properties are found in Modern Greek, but not the fourth, while the status of the first is unclear.

(60) But [a man to lyve pesibly with harde & overthwarte men] . . .
'But for a man to live peacefully with hard and hostile men . . .'
(*Imit.Chr*. 2.3.14; cited in Fischer *et al*. 2000:217)

Here, as in the NE *for NP to VP* construction, the subject of the infinitive is in a position, possibly associated with an EPP feature, which is higher than SpecMP – compare the discussion at the end of the previous section. The following construction indicates that there was a compound *forto* element at some stage of ME, probably in M:

(61) I for to go is necessary. (Lightfoot 1979:187)

For NE, though, the structure is as in (62), as we saw in the previous section:

(62) $[_{CP}$ *for* (NP) $[_{NegP}$ (*not*) $[_{MP}$ *to* $[_{TP}$ . . .

Aside from the development of the *for*-complementizer and the *for NP to VP* construction, and the loss of infinitival movement inside TP (in two stages – see above), this structure is the one that resulted from the pre-OE reanalysis of purposive nominalizations given in (56).

We see then that the development of English *to*-infinitives involved two principal changes: the reanalysis in (56), which was arguably pre-OE, and the replacement of *that* + subjunctive clauses by *to*-infinitives in early ME, which involved a reassignment of certain modal features from T to M. Later, *for*-infinitives of various kinds developed and infinitive movement to T was lost, followed by loss of infinitival morphology (a development which may have had other important consequences, notably in triggering the reanalysis of the modals, as argued in Chapter 2, section 1; see also note 15). We interpret the early ME change as creating a structure identical in relevant respects, and very similar in origin, to the Greek *na* and Calabrian *mu* constructions discussed in the earlier sections of this chapter. Aside from the independent developments involving the loss of V-movement and the introduction of the *for NP to VP* construction, this construction is effectively the same as the Greek/Calabrian construction and resulted from the same kind of grammaticalization.

One last observation before we leave this section. Notice that while *to* is reanalysed as a C element (a modal particle), prepositional *to* survives all along. As argued above, this kind of categorial split seems to be dependent on the properties of the complement. In standard terms 'infinitival' *to* and locative prepositional *to* are not synchronically related (cf. Pullum 1982 and Radford 1997, Chapter 2 for a summary of the arguments). Notice though that, according to the analysis presented so far, the basic difference arises not from the intrinsic

properties of the two kinds of *to*, but from the properties of their respective complements. In other words, we can still maintain that we have a common syntactic category, in the sense that there is a common property shared by both variants, which surfaces either as P or as C/M depending on the syntactic context. According to Christidis (1989) the common semantic property is that of directionality: spatial for P *to*, temporal (irrealis) for modal *to*. A similar observation holds for deictic/presentational *na* (D) and modal (irrealis) *na* (C/M) in MG, and arguably for the *mo* versus *mu* pair (D vs. C/M) in Southern Italian. In other words, the underlying common semantic property and the way grammaticalization works in this respect can be taken as evidence that the syntactic categories P/C/D are closely related, to the extent that they can be treated as different syntactic realizations of the same set of features. In other words, what distinguishes a C from a D category is the nature of its complement (propositions vs. properties/individuals respectively). Indeed the similarities between C and D have been acknowledged in the literature (cf. Horrocks & Stavrou 1987, Szabolsci 1983/4, Siloni 1990, Cinque 1994, among others). The same holds for the similarities between P and the categories D and C: the case of French *de* or Italian *di* point in that direction (cf. Kayne 1993, 2000). These so-called prepositions can surface as C elements when they take a clausal complement, but akin to a D element when they take a nominal complement (cf. Cardinaletti & Starke 1999:184). If this is correct then change of one into the other comes as no surprise. We will see another instance of this change when we consider the complementizer *that* in the following section.

3.4 *The English complementizer* that

3.4.1 **that**: *demonstrative vs. complementizer*

In the previous sections we considered the development of modal particles, such as *na, mu* and *to*. Although each of these elements derives from a different lexical source, they all seem to follow the same steps in their grammaticalization as modal particles. The triggering factor for their reanalysis as modality markers has to do with the loss of infinitival and subjunctive morphology. Under these conditions the elements under discussion are reanalysed as modal particles in the C system. The analysis of *to* and partly *na* as C elements is rather novel in this respect; this is less so for *mu*, although in the present account we have analysed it as an element associated with a Modality head, and not as a typical complementizer. In this connection, the analysis proposed here for *mu* is novel. In the present section we will consider the development of typical

complementizers such as the Germanic *that*-complementizers and further explore the change in categorial status, that is, D > C, which was mentioned in the previous sections. We concentrate on Germanic *that*, as the development of this has been discussed in the recent theoretical literature (see Ferraresi 1997, Kiparsky 1995, Longobardi 1991). However, there is reason to think that the development of *that* is typical of the development of *that*-complementizers in other language families, for example Latin *quod* to Romance *che/que* and of Greek *oti* and *pou*.

The element *that* in NE has a dual status: a demonstrative pronoun, as in (63a), or a complementizer as in (63b):

(63) a. *that* (book)
b. I think [*that* John is a smart guy]

The two instances *that* have been standardly analysed as synchronically distinct lexical items belonging to the category D and C respectively. The claim that this is an instance of two distinct, albeit homophonous, items is based on a number of phonological, morphological, syntactic and semantic differences (cf. Radford 1997, Chapter 2). Phonologically, C *that* is reduced, that is, [ðət], while this is not the case for its D counterpart. Morphologically, demonstrative *that* is in opposition with *this*, and has a plural form. Complementizer *that*, on the other hand, cannot inflect for plural, and forms a paradigm with elements such as *for* and *if* (and *to* according to our analysis in the preceding section). Syntactically, C *that* takes an IP complement (proposition), and can be optional in certain contexts (cf. Stowell 1981, Chapter 5) without dramatically affecting the meaning of the clause. On the other hand, D *that* takes an NP complement (individual/property), and cannot delete without giving rise to ungrammaticality, or affecting the meaning of the DP:

(64) a. I think (that) John is smart.
b. I want *(that) book.

Finally, semantically, it has been argued that C *that* is void of semantic content (cf. Lasnik & Saito 1992), whereas demonstrative *that* has semantic content, being a deictic element.[16] In this sense, the meaning of demonstrative *that* is

16. Notice that demonstrative *that* may not always express distance, as when it is used in pronominal relatives (Lyons 1999:19):

i. She prefers her biscuits to **those** I make.
ii. I want a coat like **that** described in the book.

heavily contextual, while this is not so for C *that* (see also Bresnan (1972) for a discussion of the semantic properties of *that*).

Each of these arguments seems to suggest that D and C *that* are simply homophonous items, although they are historically related, in the sense that the latter was derived from the former. Notice though that each of the above arguments regarding the differences between the two can be challenged. Consider the fact that C *that* is phonologically reduced, which is to be expected, on the basis that functional elements are phonologically reduced. The absence of phonological reduction in the case of D *that* can be accounted for on the basis that being a deictic element, it can receive some sort of stress (cf. also the discussion of the two *na* in MG and *mo* vs. *mu*, in section 3.3 above). This pattern should be seen in parallel to the contrast found between full pronouns and clitics: the former receive full stress, while the latter are unstressed (cf. Cardinaletti & Starke 1999).

Consider next the morphological differences between the two and the absence of a plural form for complementizer *that*. The D *that* lexicalizes a feature associated with demonstratives, presumably a deictic feature, given the contrast between *this* and *that* in terms of close versus distant proximity to the speaker. In addition to this feature it also lexicalizes Number, as the availability of the plural form indicates. Number in nominals is quantification over individuals or properties, and structurally corresponds to a NumP (cf. Ritter 1991, Cinque 1994, among others; see Giusti 1997 for an overview), as shown in (65) (we elaborate on the position of demonstratives in Chapter 4, section 4.1):

(65) $[_{DP}$ *that/those* $[_{NumP}$ $t_{that/those}$ $[_{NP}]]]$

If we want to treat C and D *that* alike, the obvious question is what blocks the plural form in the C system. In other words, why is (66) ungrammatical?

(66) *I don't believe *those* the world is round

One could argue that the plural *those* can be taken to mark an interpretation which yields quantification over propositions ('I don't believe those propositions which assert/state/entail that the world is round'). The structure in (65) can provide an answer to this question: what makes *that* behave differently inside the DP is precisely the presence of a NumP, which is presumably absent in the CP system, at least following standard assumptions. In other words, the morphological differences between the two elements are not due to the intrinsic

absence of a plural form for *that* as C, but to the absence of the relevant functional category NumP in the C domain.[17]

In relation to this, it is interesting to note that embedded propositions correspond to singular terms. Independent evidence for this comes from the availability of nominalized clauses in MG, as in the example below (67) (cf. Roussou 1991):

(67) a. [$_{DP}$ To [$_{CP}$ oti efije]] me stenoxorese.
the-sg that left-3sg me upset-2sg
'(The fact) that she left upset me.'
b. *Ta oti efije
the-pl that left-3sg
c. *to* pedhi vs. *ta* pedhja.
the child vs. the children

In (67a) the *oti*-clause is embedded under the D *to*. Notice that although the determiner *to* has a productive plural form, namely *ta*, as shown in (67c), only the singular form is possible when it is used to introduce a clause. This kind of restriction parallels the one concerning *that* in (66). A similar restriction holds when a pronominal replaces the CP in certain contexts:

(68) a. The earth is round.
b. I don't believe *it/*them.*

Once again, only a singular pronominal is possible, excluding the plural form which is in principle available. These differences have nothing to do with the morphological properties of the pronoun, but are linked to the intrinsic semantic properties of propositions. This is in accordance with Davidson ([1968] 1997:828–829) who argues: 'sentences in indirect discourse, as it happens, wear their logical form on their sleeves (except for one small point). They consist of an expression referring to a speaker, the two-place predicate "said", and a demonstrative referring to an utterance.' In other words the sentence in (69a) has the logical structure in (69b):

(69) a. Galileo said that the earth was round.
b. Galileo said that: the earth is round.

In Davidson's analysis, the *that* used in (69a) is actually the demonstrative. Although it is possible to argue that *that* in terms of its position in the

17. Notice that the cases of complementizer agreement of the type found in West Flemish, for example (Haegeman 1992), are different from the one mentioned above in that the number agreement which shows on the C is the one associated with the subject.

clause structure has also been grammaticalized as a C element (given the morphophonological properties mentioned above), what is crucial for our purposes is that from a semantic point of view the C *that* can be analysed like D *that*. In the following section we will see how this is important for the development of the complementizer *that*, and other C elements of this kind in other languages.

The above discussion partly gives an answer to the question regarding the final distinctive property between D and C *that*, namely that the former but not the latter has semantic content. The assumption regarding C *that* has been mainly motivated on syntactic grounds, in order to account for the fact that it can delete in certain contexts. In this respect it has been treated very much like expletives (*there/it*), which are also assumed to lack semantic content and therefore require an associate (cf. *There arrived a man*). In more recent analyses though, expletives like *there*, for example, do have feature content (cf. Chomsky 1995, Chapter 4). Because of this, they do not trigger expletive replacement at LF. In fact merger of *there* in SpecTP is an alternative way of satisfying the EPP, and it is perhaps one of the few mechanisms (if not the only one) that allows a DP subject to occur in a postverbal position. The same reasoning can extend to C *that*. In fact, it has become rather apparent in the recent literature that *that* has feature content. For example Rizzi (1997) argues that *that* can bear the following feature specification:

(70) a. *that*: +declarative, (+finite)
b. $[_{\text{ForceP}}$ *that* $[_{\text{FinP}}$ t_{that} $[_{\text{TP}} \ldots]]]$

The +finite specification is optional in the sense that there are cases where *that* has to be merged directly in Force (e.g. when embedded topicalization takes place). Thus the obligatory feature which characterizes C *that* is +declarative. This feature can be taken as deictically referring to the truth of the proposition expressed by the IP complement to C *that* in the same way that the demonstrative deictically refers to the individual expressed by the complement to D *that*. This intuition regarding the nature of declaratives seems to underlie Davidson's account of their logical structure, cited above (we return to the status of the declarative feature in Chapter 5).

In terms of the C structure presented in sections 3.1–3.3, we would say that *that* is specified for clause-typing properties, hence its opposition with elements like *if*, as well as modal properties (realis), hence its opposition with *to*. If there is a subordinating head, as illustrated in (9) above, then *that* can

be specified for this property as well (hence its opposition with *for*), yielding the structure in (71a). This is supported by the fact that there can be no adverbials preceding *that* in embedded clauses, as shown in (52b), repeated below as (71b):

(71) a. [$_{CP}$ *that* [$_{OpP}$ (*that*) [$_{MP}$ (*that*) [$_{TP}$ . . .]]]]
b. [*In general that John knows what's going on] is a surprise.

As (71) shows, *that* in NE can in fact lexicalize all three positions in the C system. Lexicalization of M by *that* is possible to the extent that there is no other material intervening between M and Op. In this respect, it behaves like *na* in MG. Unlike *na*, though, it can clearly lexicalize the highest C position as well, very much like *pou* in MG. According to the above discussion, it does not make any sense to claim that *that* as a complementizer has no semantic content, given that it realizes features in the C domain which are interpretable at LF.

The discussion so far was meant to show that the differences between C and D *that* can be accounted for primarily as a consequence of the fact that they take different complements. This allows us to maintain that in essence we are dealing with one and the same lexical item, which can surface as either D or C depending on the syntactic context.

Notice that if we assume that C and D *that* are completely distinct elements which happen to be homophonous, then we have to assume that grammaticalization of *that* as a C element not only led to categorial change, but also crucially created a new item. If, on the other hand, we take it that these two elements can still be related then the grammaticalization of *that* as a complementizer implies that it has developed a new function in the structure, in the sense that it relates to both N- and V-related categories. It is worth mentioning that this is quite common in various languages. As already mentioned in the previous section (3.3) at some stage in the history of English, *to* not only became associated with DPs but also introduced IPs as well. This holds for *for* as well, which apart from its P function, can also appear in C, and assume a position very similar to that of *that* (see Jarad 1997, Fischer *et al.* 2000:214–220 on the development of *for*). Italian exhibits the same pattern with the element *di*, which can take a nominal complement (in which case it is identified with a preposition), or an IP (in which case it is called a complementizer); the same holds for French *de*, to mention just a few examples (cf. Kayne 1984 and 2000 for recent analyses of these elements). In other words, it is very common that one and the same category can surface as D or C. In this respect the development of complementizers out of demonstratives (or pronominals in general) is not surprising. In the

following section we will consider the development of *that*, and account for its grammaticalization as C.

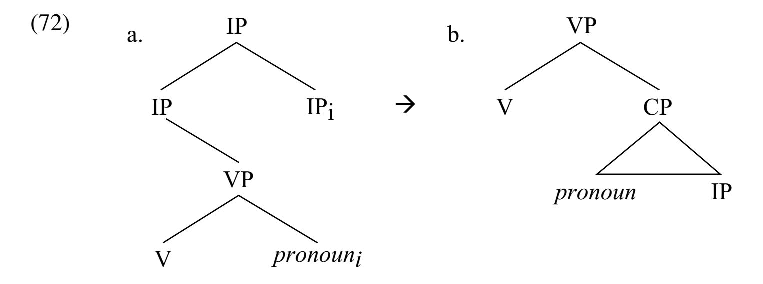
3.4.2 The development of ***that***

Diachronically, it has been argued that the complementizer *that* derives from the demonstrative *that* (see Ferraresi 1991, 1997, Kiparsky 1995, Longobardi 1991). If we take it that demonstrative and complementizer *that* in NE are simply homophonous items, then we need to show how this categorial change took place. On the other hand, if we consider them as variants of a basic abstract category, then we can account for this change in structural terms, as already suggested for infinitival *to* above.

For Kiparsky (1995), the development of Germanic *that*-complementation involves two steps. The first is the innovation of finite embedded CPs (from Indo-European to Germanic; this development also took place in several other branches of Indo-European), along with (or at the expense of) non-finite complements (cf. the discussion on Greek in 3.2). The latter is a consequence of the former in the sense that finite embedded CPs triggered the development of finite complementizers. Kiparsky (1995) relates this structural change to another change, namely the innovation of V2 constructions: the projection of a C position was the prerequisite for V movement higher up in the clause structure.[18]

According to this analysis, the relevant structural change is the one given below (where we label the adjoined constituent IP, although this may not quite be what Kiparsky assumes, and may not be quite accurate to the extent that most of the examples of adjoined clauses Kiparsky gives feature relative clauses, which are presumably DPs):

(72)



18. Interestingly, the Romance languages have developed a *that*-complementizer from the Latin neuter relative pronoun *quod*, and the Romance languages have arguably all gone through a V2 stage (see Roberts 1993a, Vance 1997 on French, Fontana 1993 on Spanish, Ribeiro 1995 on Portuguese, Benincà 1995 on Italo-Romance).

The structure in (72a) involves adjunction of the IP (presumably to IP), which is frequently associated with a coreferential pronominal in the relevant grammatical-function position in the main clause. The change is from adjunct subordinate clauses, usually with a pronominal element present, to complement clauses. The structure in (72a) is very much what we would find in clitic-doubling constructions: a pronominal element fills in the complement position and is related to an argument DP in a peripheral position. On this basis, there is nothing strange about the structure in (72a). In fact, NE allows for a similar construction with some predicates, as in the following examples (albeit with a complementizer present in the adjunct clause):

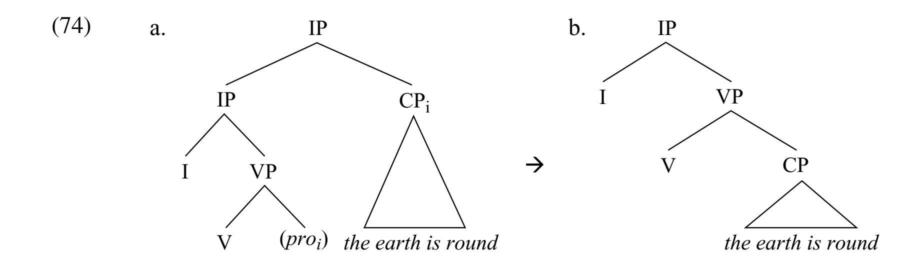
(73) I know/regret it [that John is a liar]

In (73) the pronoun *it* is in complement position, while the *that*-clause is extraposed (note that such clauses are islands: ?**Who do you regret it that John saw?* See Cinque 1991 for an account of these effects, and Pesetsky 1991 and Smith and Tsimpli 1995 for an analysis of these constructions).

The basis of Kiparsky's (1995) analysis is that the development of lexical items that function as complementizers signals a change from *parataxis* to *hypotaxis*, in the traditional sense (i.e. a previously independent clause now becomes dependent on a matrix predicate). Notice incidentally that the structure in (72a) is also in accordance with the Davidsonian approach outlined above, which takes *that* to be outside the embedded clause for purposes of semantic interpretation. The change in (72) can be taken as an instance of structural simplification: a former adjunct clause becomes a complement, thus eliminating the adjunction structure [$_{IP}$ IP CP] in favour of a head-complement structure, for example, [$_{V'}$ V CP]. It is in this respect that we can interpret the change from (72a) to (72b) as an instance of grammaticalization, consistent with the assumptions underlying our view of grammaticalization.

To some extent the adjunct > complement restructuring appears to be on the right lines. However, the change summarized in (72) as it stands cannot quite capture the fact that the pronominal in complement position was reanalysed as a complementizer. In other words, the idea of structural simplification could still go through if a sentence like (74a), with no pronoun or with a phonologically null pronoun (both of which were possible in the original adjunction construction, as Kiparsky shows), was reanalysed as in (74b), that is, with the pronominal completely absent:

(74)



Kiparsky follows Kayne (1982) in assuming that clauses require a nominal head in order to be arguments, and hence the former pronouns became complementizers. In any case, structural simplification on its own is not sufficient to account for the fact that the pronoun has to become part of the new complement. Unless we assume that what actually takes place after structural simplification is reanalysis of the pronoun as a C element, which roughly speaking involves a leftward shift of the constituent boundary, as in (75):

(75) I think that [the earth is round] → I think [that the earth is round]

This kind of shift is not uncommon. For example, as mentioned in section 3.3, *for NP to VP* constructions in English can be ambiguous: the *for NP* can be either part of the VP, or part of the embedded CP (cf. Lightfoot 1979, Jarad 1997, Fischer *et al.* 2000:214–220). In fact, it was this kind of ambiguity that gave rise to the reanalysis of *for* as a C element in certain infinitival contexts (see section 3.3).

In this connection, the following examples from Gothic, pointed out by Ferraresi (1991:30–35) and Longobardi (1978, 1994a) are relevant:

(76) a. bi thamma wairthith **thamma** daga **ei** sunus mans andhuljada (L 17,30)
by this became the-dat day C son of-man revealed-self
'These ways become the day when the Son of Man reveals Himself'

b. witands **thatei** garaihtamma nist witoth satith (T 1,9)
knowing that+C the-just-dat not-is law made
'Knowing (this) that the law is not made for the just'

c. . . . domjandans **thata thatei** ains faur allans gaswalt (k 5,15)
. . . thinking about this that one for all dies
'. . . thinking about this, that one may die for all'

In (76a) the demonstrative *thamma* cannot be in C, as it clearly forms the head of the relative with *daga*, while *ei* occupies C. In (76b), the status of *thatei* is ambiguous: on the one hand, *that* could be in D with *ei* in C; on the other hand, *thatei* could be interpreted as a compound element occupying C (see Ferraresi

1991:31ff. for more discussion). In (76c) *thatei* must be in C, as the head of the relative is *thata*. Note that in terms of a raising analysis of relative clauses (see Vergnaud 1974, Kayne 1994, Bianchi 1999), what is at stake is raising of the head of the relative. More precisely, the examples in (76) have the structures in (77) according to Kayne's (1994:86f.) proposal for relative clauses:

(77) a. ... [$_{DP}$ thamma [$_{CP}$ [$_{NP}$ daga] [$_{C}$ ei] [$_{IP}$ ... t_{daga}]]]
b. ... [$_{DP}$ that [$_{C}$ ei] ... OR ... [$_{C}$ thatei] ...
c. ... [$_{DP}$ thata [$_{C}$ thatei ...

Clearly, loss of NP raising to SpecCP (in Kayne's terms) is a major factor in the reanalysis of the determiner which heads the relative clause (and is a demonstrative, as the glosses and translations clearly indicate). Note also that (77c) (and (77b) on the first structural analysis given) corresponds very closely to Davidson's analysis of *that*-clauses.

The older Germanic languages had a type of relative clause featuring a demonstrative and an invariant complementizer (*þe* in OE; *ei* in Gothic; *the* in Old High German). This construction seems also to have played a role in the development of *that*-complementizers, since in this case the natural analysis is to treat the pronoun as raised to SpecCP, and then reanalysed as part of C. Ambiguous examples from Gothic and OE are given in (78):

(78) a. than qimith parakletus **thanei** ik insandja
than will-come P. who+C I will-send
(J 15,26; Longobardi 1994:355)
b. ond **ðætte** tælwyrðes sie, ðæt hie ðæt tælen
and that+C/C blameworthy be, that they that blame
'and that they may blame what is blameworthy' (Campbell 1959:291)

The reanalysis here then may be of the kind shown in (79):

(79) [$_{CP}$ that$_i$ [$_{C}$ Prt] [$_{IP}$ .... t_i ....]]] > [$_{CP}$ [$_{C}$ that (+Prt)]]

In conclusion, the development of *that*-complementizers from demonstrative pronouns illustrates several features that are typical of grammaticalization as we see this process. First, there is phonological reduction (loss of older particles *ei*, *þe*; reduction of *that* to [ðət]). Second, certain morpheme boundaries, for example between *that* and *ei* and *þæt* and *te* (= *þe*) in (78), disappear – note that this is a further case of simplification of structure. Third, we observe adjuncts becoming complements, the loss of overt movement of NP to SpecCP in relatives and reassignment of grammatical features – all features of syntactic change that we have seen in previous sections and chapters. Finally, *that*

undergoes a semantic change which appears to be a direct consequence of its category change – see the discussion in the previous section.

Before we leave this section, we will mention a related case regarding the grammaticalization of the complementizer *pou* in Greek. The element *pou* has derived out of the CG relative adverbial *hopou* (where) > *opou* > *pou* (cf. Andriotis [1983] 1990:291). As a relative adverb it was restricted to relative clauses, and it progressively replaced the relative pronoun *hos* (in all genders), as the following example shows (from Jannaris 1897, §608):

(80) eis to oros opou aftos eipen
on the mountain where he said-3s
'on the mountain where he said' (J. Moschos 2914 A; 6th–7th century AD)

In MG, on the other hand, the derived form is used as a relative clause marker (very much like *that* in English). As a relative clause marker it is in complementary distribution with the relative pronoun, as shown in (81a–b). Furthermore, *pou* is also used to introduce factive complements (cf. Christidis 1986, Roussou 1994, Varlokosta 1994), as in (81c). The relative adverb *opou* is still found but in this case it is restricted to a locative adverb in free relatives, as in (81d):

(81) a. [To vivlio [*pou* aghorases]] ine endhiaferon.
the book that bought-2sg is interesting
b. [To vivlio [*to opio* aghorases]] ine endhiaferon.
the book the which bought-2sg is interesting
'The book that you bought is interesting.'
c. Lipame [*pou* efijes toso noris].
am-sorry that left-2sg so early
'I'm sorry that you left so early.'
d. Pijeno [*opou* thelo]
go-1sg where want-1sg
'I go wherever I want.'

The presence of *pou* in relative clauses extended from cases like the one in (81a) to all relatives and certain complement clauses.

The development of *pou* is summarized as follows: first it is found as a relative pronoun (presumably in Spec, thus an operator) modifying locative expressions. From locative it becomes a generalized relativizer, reducing to *pou*. It is further used (as an extension of its relativizing function) to introduce complements associated with a certain class of predicates, namely factives, thus being distinguished from *oti*. As Horrocks (1997:208) shows, this development is already ongoing in the Byzantine period. The reanalysis of *opou* > *pou* is similar to that of *that* shown in (79), as can be seen from (82):

(82) $[_{CP}$ *opou*$_i$ $[_C$] $[_{IP}$ .... t_i ....]]] → $[_{CP}$ $[_C$ *pou*]]

In this respect the development of *pou* is an instance of grammaticalization, as it involves semantic ‘bleaching’ (loss of locative), phonological reduction and categorial change (from Adverb, or presumably a D element, to a C) (but see also Roussou & Roberts 2001 on an account of *pou*-complements in MG).

In the present section we have considered the development of typical complementizers, focusing on *that*-elements. We considered and modified Kiparsky’s (1995) analysis in order to provide an account of the data. Here, as in the previous cases we have looked at, the typical properties of grammaticalization hold; in particular structural simplification and the loss of movement play a central role.

3.5 From verb to complementizer: serial verb constructions

3.5.1 Introduction

In our account of the reanalysis of lexical verbs as auxiliaries, as in the case of English modals, the Romance and the Greek future in Chapter 2, we argued that in all these cases the lexical verb is reanalysed upwards along the functional structure. With respect to the Greek future, we showed that the verb *thelo* in its reduced form finally becomes a particle (*tha*) in the C system (an M head). In the present chapter, we have also considered the case of the modal particle *na* (which forms a natural class with *tha*) out of the subordinator *hina*, and shown the similarities with the development of Calabrian *mu*, English *to* and, with further complications, *that*-complementizers. All the cases we have considered so far seem to provide empirical support for our claim that the ‘path’ of grammaticalization can be structurally defined for either lexical items or grammatical features.

We will complete this chapter by considering one more case of grammaticalization of a C element, and in particular the development of complementizers out of serial verbs. Recall that in our discussion of *tha* (Chapter 2, section 2.3) we argued that the biclausal *thelo* + infinitive construction was reanalysed to a monoclausal one, upon the loss of the final *-n* on the infinitive. Owing to this loss, the former infinitival V was reanalysed as a finite one, yielding a serial verb construction, for example *thelo grafo*. This construction occurred in parallel with the biclausal one, which involved a *na*-complement: *thelo na grafo*. The development of *tha* emerged out of the combination of these two structures, thus yielding the reanalysis of a lexical V to a modal particle in C. Another well-known case of V > C reanalysis discussed in the literature is

that of verbs of 'saying' which can resume the function of a complementizer and be used as elements that introduce embedded clauses (see Heine & Reh 1994, Lord 1993 for a detailed discussion and more references). We will argue that this case is also an instance of grammaticalization in that it involves lexical to functional reanalysis in an upward fashion. In particular we will show, following some rather standard assumptions in the literature, that the V > C reanalysis has a serial verb construction as its basis, such that the higher V in the construction moves to, and is subsequently merged in C, leaving the lower V as the only predicate. We will draw our data from Klamer (2000) who considers the grammaticalization of report verbs to complementizers in two Austronesian languages, namely Tukang Besi and Buru.

3.5.2 Quotative constructions and complementizers

Klamer (2000) considers the development of Buru *fen* and Tukang Besi *kua* as complementizers out of the corresponding verbs of saying. The Buru item *fen* (or *fene*) is used as a complementizer, a verb of saying or a quote marker. This distribution is illustrated by the following examples (from Grimes 1991, cited in Klamer 2000:76–77):

(83) a. Nak ana-t fene, 'Ng-ina, nau dah.olo'
3sgPoss child-nom say 1sgVoc-mother 1sgPoss bunch.head
'Her child said: "Mother, the hand (i.e. of bananas) at the top of the stalk is for me" ' (Grimes 1991:531)

b. Da prepa fene ringe mata haik.
3sg say FEN 3sg die perf.
'He$_i$ said that he$_j$ was already dead.' (Grimes 1991:133)

When *fen* is used as a verb of saying, or a quote marker, it is followed by an intonational break, indicated by the comma in (83a), while there is no such break when *fen* is a complementizer, as in (83b). The C *fen* is in complementary distribution with the irrealis complementizer *la* (Klamer 2000:79), as illustrated in the following examples (cf. also the corresponding pairs in MG, Southern Italian and English discussed in the previous sections); Dist = Distal, Irr = Irrealis:

(84) a. Sira erei fen du eptea fi dii.
3pl refuse FEN 3pl sit Loc Dist
'They$_i$ refused, (saying) they$_i$ would stay here.'

b. Sira erei la du eptea fi dii.
3pl refuse Irr 3pl sit Loc Dist
'They refused to stay here.'

Coreference is possible when the embedded subject is a pronominal clitic, as in (84). If the embedded subject is a full pronoun, as in (83b), then there is a disjoint reference effect, or in Klamer's terms a switch-reference effect. The pronominal clitic may also be dropped, in which case the reference of the subject is fixed by the discourse. In Tukang Besi, the item *kua* is also used as a quotative marker or complementizer, with the additional difference that it no longer exhibits any verbal properties. In other words, it is more grammaticalized than its Buru counterpart. The relevant examples are given below (examples from Donohue 1995, cited in Klamer 2000:82; R = realis):

(85) a. To-wuju-'e kua to- 'ita-'e
1p.R-persuade-3Obj KUA 1p.R-see-3Obj
'We persuaded her to let us see her.' (Lit.: 'we persuaded her *kua* we see her')

b. To-dahani kua no-'ita-kita i aba
1p.R-know KUA 3R-see-1p.Obj Obl before
'We know that they saw us before.'

In (85a) *kua* can be interepreted as a quote marker or a complementizer, while in (85b) it can only be a complementizer. As a complementizer *kua*, just like *fen*, is subject to selection by the relevant matrix predicate (e.g. verbs of saying, reporting, mental or physical perception). The pronominal subject in this language takes the form of a prefix, which may be dropped, as in Buru. Unlike Buru though, in Tukang Besi it is the presence of the complementizer *kua* that triggers an obviation effect (disjoint reference, or 'switch-reference'); coreference is possible provided *kua* is absent, as the contrast between (86a) and (86b) shows:

(86) a. No-roda tabeda no-wila.
3sg-remember must 3R-go
'She$_j$ remembered that she$_{j/k}$ had to go.'

b. No-roda kua tabeda no-wila.
3sg-remember KUA must 3R-go
'She$_j$ remembered that she$_{*j/k}$ had to go.'

Thus both languages have a complementizer which has a verb of saying as its lexical source, and furthermore they both allow for a null subject which is discourse identified. They differ, though, with respect to the element in the clause structure that marks switch-reference (or logophoricity in Klamer's terms): in Buru it is the full pronoun (that is the subject itself), while in Tukang Besi it is the complementizer.

Based on data of this type, Klamer (2000:87) argues that the grammaticalization of C out of a report V in these languages goes along with the following characteristics:

(87) *Properties*
a. Discourse pro-drop.
b. Juxtaposition for clause combining is possible.
c. No morphosyntactic distinction between direct and indirect speech.
d. C-initial.
e. The quote clause follows the report verb.
f. The quote verb is intransitive.

Property (e) is not attested in Tukang Besi, given that *kua* no longer functions as a verbal predicate. Klamer then argues that the first stage in the reanalysis of these verbs of saying to quote markers/complementizers arises in contexts like the one below from Buru, where the matrix subject is not overtly expressed:

(88) Fen, 'Ng-ina nang dah.debu-k.'
FEN 1sgVoc-mother 1sgPoss bunch repeat-k
'(He) said: "Mother, (then) the next hand is for me." '

The content of the matrix subject in this case is contextually recovered (property (87a)). Given further that the report verb is intransitive (87b), the verb appears not to have any argument structure. Thus, on the one hand, the syntax allows for a null argument (subject), on the other hand, semantics requires an argument. According to Klamer this mismatch between syntax and semantics can be repaired in one of the following ways: (a) by introducing an overt pronominal argument, or (b) by losing the unrealized argument. If the latter option is adopted, as is the case here, the intransitive report V can no longer function as a predicate and is ultimately reanalysed to a quote marker.

More precisely, reanalysis follows the steps below (Klamer 2000:92–93):

(89) a. [$_S$[$_\alpha$ [$_{NP}$ he] [$_{VP}$ REPORTs] [$_\beta$ [$_{NP}$ I] [$_{VP}$ go]]]] >
b. [$_S$[$_\alpha$ [$_X$ REPORTs]] [$_\beta$ [$_{NP}$ I] [$_{VP}$ go]]] >
c. [$_S$ [$_X$ REPORT] [$_\beta$ [$_{NP}$ I] [$_{VP}$ go]]] >
d. [$_S$ [$_\gamma$ [$_{NP}$ he] [$_{VP}$ says/thinks/...]] [$_X$ REPORT] [$_\beta$ [$_{NP}$ you] [$_{VP}$ go]]]

Loss of the external argument gives rise to the reanalysis of the report V to a category-neutral item (REPORT), which is also morphologically impoverished (89b). This reanalysis further gives rise to structural simplification: in the absence of a higher predicate, there is only one predicate/clause present (89c). Semantic bleaching of the original report verb triggers the presence of another verb which now carries the function of report, saying, etc. The category-neutral

item REPORT between the two clauses in (89d) can then be interpreted as a complementizer. In this final stage, the REPORT item shows all the features of grammaticalization: it is morphologically and semantically impoverished, and belongs to a different syntactic category (V > C).

In Klamer's (2000) analysis the crucial point is that the original report verb becomes a category-neutral element, which the syntax can interpret as a complementizer. In other words, the C status is determined by the syntactic structure the REPORT item occurs in. This latter point is consistent with our approach to grammaticalization as presented so far (cf. the preceding sections). However, a number of problems arise with the actual implementation of Klamer's analysis. First, if REPORT is a category-neutral element, then what prevents it from appearing in any possible syntactic position? Second, what is the position in the clause structure that the REPORT item occupies in (89d)? If it is a complementizer, there should be one further step involving the reanalysis of REPORT as part of the lower clause; the new clause is then embedded under the matrix predicate. However, this is not so obvious in the above structure. Finally, why would reanalysis of REPORT force the presence of another report predicate, as in (89d)? This is even more problematic if we consider that the added verb is not necessarily a report verb or a verb of saying, as already mentioned above.

Let us then see how we can formulate this reanalysis in our terms, avoiding the problems raised above. The first step of grammaticalization, that is, loss of argument structure, is a more general property of V reanalysis. This was already discussed with respect to the development of English modals, as well as the Latin *habeo* and Greek *thelo* as auxiliaries. Despite the similarities between those cases and the present one, there are nevertheless some crucial differences. For example, loss of argument structure in the case of English modals does not result in the absence of a subject, given that an overt subject is obligatory in finite clauses. In Greek, on the other hand, the subject may be null, but there is always an agreement affix present on V, even when this is used as an impersonal verb, as was shown for impersonal *thelei* in Chapter 2, section 2.3. In Buru and Tukang Besi, on the other hand, pro-drop leaves a verb which has no agreement marking, in other words a lexical item which does not show any typical properties of a verbal predicate. A similar situation is attested with the form *the* of the verb *thelei* in Greek, which has no agreement morpheme. In our discussion in Chapter 2, we argued that loss of argument structure and the relevant morphology leads to merger of the relevant class of lexical V to I. This is the first step in the reanalysis of V > (I) > C.

In order to illustrate how this works, suppose then a serial verb construction has a structure with two (or more) VPs (cf. Baker 1989, the collection of

papers in Joseph & Zwicky 1990 and Lefebvre 1991, Collins 1993, Déchaine 1993, Cormack & Smith 1994, den Dikken & Sybesma 1998, among others). Assuming that one of the characteristics of serial verbs is that they denote a single event, then we expect them to have a single T head. Under locality, since it is the higher V that is closer to T, it must be the higher and not the lower V that is prone to reanalysis. If the higher V loses its external argument (and is furthermore intransitive, in the sense that it has no DP complement), then there is no evidence for the presence of two predicative Vs. Faced with this set of data, the language learner opts for a structure that has one V. In terms of change, the reanalysis involves structural simplification in the sense that the higher V head/projection is eliminated. The next step involves reanalysis of the morphologically and semantically impoverished item as a C element:[19]

(90) a. $[_{CP}$ C $[_{TP}$ T $[_{VP1}$ V_1 $[_{VP2}$ $V_2]]]]$ >
b. $[_{CP}$ C $[_{TP}$ $[_T$ $V_1]$ $[_{VP2}$ $V_2]]]$ >
c. $[_{CP}$ $[_C$ $V_1]$ $[_{TP}$ T $[_{VP2}$ $V_2]]]$

Once the former V is directly merged to C, it becomes an element which subsumes the typical properties of a complementizer, and therefore has no V features (cf. also the discussion on *tha* in Chapter 2, section 2.3). In this respect it can be used to introduce complement clauses under the relevant predicates. This change also signals a change from a paratactic to a subordinating construction.

Under this account, there is no need to assume that a higher predicate is required to carry the function of reporting/saying, thus avoiding the problem raised by Klamer's (2000) analysis. Furthermore, we avoid the problems raised by the postulation of a category-neutral element: the reanalysed V is an element in the C system. Categorial change, then, goes along with the different positions that the reanalysed element assumes in the clause structure. The V >

19. It is not clear whether the languages in question involve V-to-T movement. According to den Dikken & Sybesma (1998) serialization is a property of languages that lack V raising (to both *v* and T). Instead these languages opt for the lexicalization of T by a distinct morpheme. This may be true for the languages discussed here (as well as the relevant African languages, or Chinese), but it may not be an absolute condition on serialization, if we allow for serialization to hold, albeit in a limited fashion, in languages that do show V raising, as is the case with Greek (cf. *thelo grafo*) and Salentino discussed in Chapter 2, section 2.3. Even if Buru and Tukang Besi have no V raising, our analysis still holds as a former V is merged in T, or perhaps directly as a C element. In other words, even if there is no former movement to these positions, the point that remains is that a former V is used to lexicalize features of T/C in an upward fashion.

C reanalysis in the case of serial verbs provides further support to our claim that grammaticalization is upwards.[20]

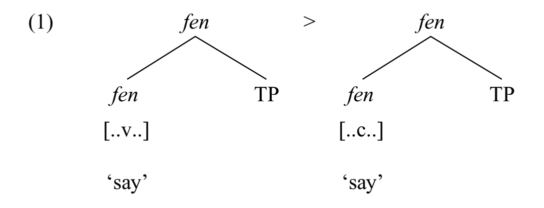
3.5.3 V > C vs. V > P reanalysis

Before we conclude this section, it is worth mentioning briefly the alternative possible reanalysis usually associated with serial verbs. In the discussion above we consider the reanalysis of the higher V in a serial verb construction as a C element, following the 'path' of grammaticalization along the clausal functional structure. Our approach also predicts that it can only be the higher V that is reanalysed along these lines, and not the lower one, on the assumption that the higher V is closer to T/C. Thus if grammaticalization is defined along the path of More/Merge, it follows that a lower V cannot cross a higher one, without inducing a Minimality effect.

It has been noted in the literature that the lower V in a serial V construction can nevertheless be reanalysed as a P (cf. Lord 1993), as in the following examples:

20. Whitman (2001) argues that V > C reanalysis is a simple instance of 'relabelling' which does not affect the surrounding syntactic structure. He argues that bare phrase structure makes this change even more apparent on the basis that there are no categorial labels projecting. In other words, in a serial verb construction where the higher V of saying, e.g. *fen*, is reanalysed as C, the change is as follows (strictly speaking *fen* has a bilabial initial consonant, as pointed out to us by Neil Smith (personal communication). In the examples below we follow Whitman's transcription):

(1)



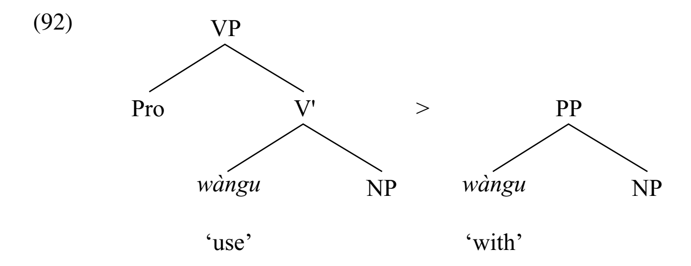
Categorial reanalysis, then, essentially involves a lexical change. Notice, though, that this cannot be the whole story, as there are still some issues that need to be resolved. For example, in the reanalysis in (i) the implicit assumption is that in a serial verb construction the second V is not just a VP but a TP. Notice that if there is a T present associated with the lower V, then it is hard to maintain that there is a single event formed by the two verbs. What is perhaps present is an Agr position, i.e., a position where the arguments of the lower V can be structurally realized. Simple relabelling cannot account for the fact that in some cases categorial changes relate to changes of the complement (cf. infinitival *to* from the locative preposition *to*). As Klamer (2000) argues whether an element is interpreted as C or P depends on the syntactic context it occurs in, i.e. whether it has a proposition (TP) or an entity (DP) as its complement.

(91) a. taku wàngu (Kambera, Klamer 2000:94)
scoop use
'scoop X using/with Y'

b. Me fle agbale le Keta (Ewe, Lord 1976:182)
I buy book be-at Keta
'I buy a book at Keta.'

Klamer (2000) argues that loss of argument structure is at stake in this case as well: when the lower V is a preposition it has no external argument (although in this case it retains its internal argument). Whitman (2001), following different structural assumptions (cf. note 20), also argues that the V > P reanalysis can affect argument structure, as shown in (92) (adapting his (27)):

(92)



In Whitman's analysis, relabelling of the relevant items triggers the elimination of a structural position, associated with the external argument of the verb (hence the lack of an external argument).

Despite the different implementations, both approaches assume that this is an instance of grammaticalization, which is paired with loss of argument structure, and in particular the external argument. It is not clear in these analyses though whether the V > P reanalysis is lexical > functional reanalysis, or whether there is simply categorial change which still yields a lexical category. Part of the problem has to do with the definition of Prepositions as either lexical or functional categories. The distinction between two kinds of prepositions is a rather standard one, and more or less accepted in the literature (cf. the list of references in Déchaine & Tremblay 1998). Bearing this in mind, one could argue that the new item which is analysed as a preposition remains lexical, and therefore can have predicative properties. If this is correct then this change cannot be treated as an instance of grammaticalization, as it does not yield a new grammatical (functional) morpheme. In other words, the preposition derived out of a verb is still interpreted as a predicate with relation properties in the sense of Hale and Kayser (1993), that is, it establishes a relation between two entities, as in the structure below:

(93) $[_{PP}$ YP $[_{P'}$ $[_{P}$ ZP]]]

If, however, the derived P is relational then it can't be the case that this reanalysis involves loss of the external argument. It is then possible to account for these data by assuming that at least in some cases there is no loss of the argument structure, but the reanalysis involves a change of the categorial status of the element involved. The question that remains is what is responsible for this reanalysis. In any case, such a change does not correspond to grammaticalization as conceived here, although it might perhaps be seen as a preliminary change, in that V > $P_{lexical}$ is a step towards $P_{lexical}$ > $P_{functional}$.

3.6 Conclusion

In this chapter, we have looked at several different cases of the development of complementizers and complementizer-like material. Needless to say, we have by no means exhausted the empirical range of the topic,[21] but we believe that the cases we have looked at are representative of the empirical range and at the same time illustrative of what we take to be the main mechanisms of grammaticalization. The first three cases discussed, Greek *na*, Calabrian *mu/mi* and English *to*, all involved the development of a CP-external element into a complementizer, or more precisely an irrealis mood marker occupying the M position in the C system (equivalent to Rizzi's (1997) Fin position). This development, although in itself involving apparent 'downward' reanalysis of the grammaticalized element, is similar to the developments discussed in Chapter 2 in that it was associated with loss of inflectional morphology (subjunctive and infinitival marking on the lexical verb). Moreover, the modal features which were earlier associated with the finite V in the I system later became associated with the M-position of the C system. In this sense, there was an 'upward' grammaticalization. The actual change in the structural position of the reanalysed element is associated with the simplification of structure: XP developing into X, and/or the loss of an adjunction structure.

The development of *that*-complementizers in Germanic and the rather similar Greek *pou* (as well as very possibly Romance *que/che* from Latin *quod*) clearly involves the loss of movement, as this element earlier underwent movement within a relative-clause construction and later becomes an invariant C element. Finally, the development of complementizers from serial verbs involves 'upward' grammaticalization without the loss of movement. This change is similar

21. See, for example, Lightfoot (1991) and Salles (2002) on the development of Brazilian Portuguese *para* from P to C.

to what Whitman (2001) calls relabelling, and clearly involves simplification of structure in that the former serial construction is reanalysed as a non-serial one; therefore, at the very least the structure of the VP is simplified.

This chapter has added one major new type of grammaticalization to what we saw in Chapter 2: upward grammaticalization of features associated with the loss of inflectional morphology encoding those features. We see the same mechanisms at work in this and in the other changes looked at here and in Chapter 2: loss of morphology, loss of movement, simplification of structure and diachronically upward movement. Clearly these mechanisms to some degree overlap, and are not all attested in every case. Moreover, we have not yet commented properly on their theoretical status. We will sort these questions out in Chapter 5. First, however, we must look at grammaticalization within the DP, in order to complete our overview of grammaticalization in the main functional systems.

4 *D elements*

4.0 Introduction

In this chapter we turn our attention to the third type of functional category: D elements. We proceed much as in the previous two chapters, in that we will examine certain well-known cases of grammaticalization, in particular the development of definite determiners out of demonstratives (section 4.1), the development of n-words (section 4.2), the development of wh-words out of indefinites (section 4.3) and of universal quantifiers (section 4.4). We show that several of these cases involve loss of movement inside the DP, and the formation (or loss of) an *Agree* relation with another head in the clause structure. In so far as they involve loss of movement, these examples of grammaticalization are therefore the D system counterpart of the development of auxiliaries in the T system, as discussed in Chapter 2. In sections 4.5 and 4.6 we discuss the development of pronouns as agreement markers (clitics and affixes), further showing how features typically associated with the DP become associated with functional heads in the clausal domain. In some respects this reanalysis is similar to the development of complementizers as discussed in Chapter 3.

In general, then, the grammaticalization of D elements offers examples of loss of movement combined with loss of morphology of a type familiar from our study of T elements in Chapter 2, the reanalysis of heads due to structural reanalysis and simplification, similar to what we saw in Chapter 3, and a new phenomenon: the addition of a formal feature to a head. These types of grammaticalization will be reviewed in detail in Chapter 5.

4.1 Determiners out of demonstratives

In the previous chapter we considered the development of complementizers out of demonstratives in connection to the English *that* (section 3.4). In the present section we will consider another development that takes the demonstrative as

its source, but which yields a definite article, that is, a D category of some sort. In connection to this we will discuss a well-known case in the literature, namely the development of the Romance article out of the Latin demonstrative pronoun *ille* (see Harris 1978, 1980, Lyons 1999:331f., Nocentini 1990, Renzi 1976, 1992, 1993, Selig 1992, Tekavčić 1980, Vincent 1997). This is a typical case of grammaticalization in the sense that it involves morphophonological reduction (*ille* > *le*), semantic bleaching (loss of the demonstrative property) and categorial change (demonstrative > article).[1]

Let us first start by considering the emergence of articles in Romance. A characteristic property of Latin was that it had no articles, as the typical example in (1) illustrates:

(1) Regina rosas amat.
Queen-nom roses-acc loves
'The queen loves (the) roses.'

At the same time, Latin had a three-way system of demonstrative pronouns, which matched in terms of person that of the personal pronouns, as shown in (2) (Harris 1978:69):

(2)	Person	Personal	Demonstrative
	1st	*ego*	*hic, haec, hoc*
	2nd	*tu*	*iste, ista, istud*
	3nd	*ille*	*ille, illa, illud*

Latin also had a fourth demonstrative, namely *is*, which was anaphoric, that is, used for something that was already mentioned in the discourse. The demonstratives *hic* and *is* were largely eliminated in Vulgar Latin, mainly due to phonological weakness (cf. Harris 1978:69). The system in (2) was restructured along the following lines: *iste* shifted to the place of *hic*, thus marking close proximity. Owing to this change the pronoun *ipse* ('the same') became the marker realizing middle proximity (2nd person), that is, it essentially replaced *iste*. All of these forms had both a demonstrative and an anaphoric use. A crucial development in Vulgar Latin seems to have been the ability of these forms to appear pronominally without an obligatory specification for proximity. Given the parallel between personal pronouns and demonstratives in (2), one could say

1. The definite article of the Romance languages greatly overlaps with the forms of object clitics. On the basis of their morphological uniformity we would assume that it is the same element that realizes different positions (as part of the DP vs. the clausal structure); for a discussion of this development see Vincent (1997), as well as the references cited there.

that the latter are not necessarily specified for a person feature in this context. The retention of the definite feature allowed *ille* (and *ipse* in some varieties) to occur with a nominal, thus functioning as the definite article.

The initial demonstrative *ille* took different forms in the various Romance languages. The following series are indicative of these changes (Vincent 1997:151):

(3)

	Masculine	Feminine	Neuter
Latin:			
(Nom)	*ille/illi*	*illa/illae*	*illud/illa*
(Acc)	*illum/illos*	*illam/illas*	*illud/illa*
French:	*le/les*	*la/les*	
Italian:	*il/i*	*la/le*	
Portuguese:	*o/os*	*a/as*	

Apart from the morphological differences, there are also syntactic differences: for example in Rumanian the definite article follows the noun (e.g. *om-ul* = man-the), while in the other Romance languages it precedes (for a presentation of the relevant data see the collection of papers in Harris & Vincent 1988).

Lyons (1999) provides a detailed discussion of the typology of articles. According to his analysis, definite articles need not be lexically specified as +definite, although they may bear deictic and agreement features. The +definite property is acquired structurally, that is, once a lexical item is in SpecDP or D. The former holds for free-standing definite articles, while the latter holds for affixal articles (e.g. Italian vs. Rumanian). Given the DP structure of nominals, the claim is that the D position is actually a definiteness position (but see Longobardi 1994b, Vergnaud & Zubizarreta 1992 for an alternative view which distinguishes between 'expletive' and 'substantive' Ds, and identifies D with Referentiality). Demonstratives occur in a position lower than that of definite articles, and can relate to D either by overt raising or coindexation (i.e. binding). This explains why the nominals modified by demonstratives are definite. In Lyons' analysis this is because the feature +demonstrative 'entails identifiability of the referent by the hearer, which is what underlies definiteness' (1999:302).

The change from demonstrative to definite article is the result of an interaction between lexical specification and syntactic structure. More precisely, the loss of the +demonstrative feature is responsible for the development of a definite article. In addition to this loss, the relevant lexical item must also occur in the D or SpecDP position. In other words, the demonstrative > definite article reanalysis cannot just be morphological, but it has to target the appropriate structural position. Regarding the development of Romance articles, Lyons

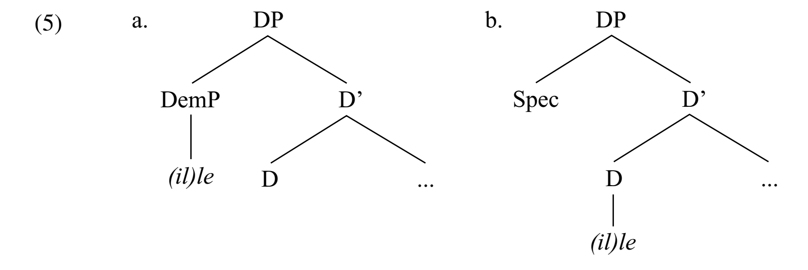
(1999) argues that the demonstrative did not directly develop into an article: initially, it must have been restricted to uses that overlap with those of the article (such as what Lyons calls 'textual-situation ostension' which is deixis without an indication of proximity, that is, without a person feature); given then that it was not fully grammaticalized it would appear to be optional. Once it becomes grammaticalized, though, and therefore associated with the DP (SpecDP or D), its presence is syntactically and not contextually determined. However, Lyons' (1999) analysis does not explain how exactly this grammaticalization took place. In particular, the question that arises is how the original demonstrative became associated with the definiteness position (the higher D). This association cannot be simply attributed to the loss of the +dem feature, as in his analysis structural reanalysis is necessary. The obvious way to state the change in our terms is to say that the raising/binding relation mentioned above is lost. This, of course, is the kind of change we have seen in the previous chapters.

Giusti (2001) also considers the change from Latin demonstrative to Romance definite article. First she adopts and adapts Renzi's (1997) system of features characterizing definite articles versus demonstratives/pronouns. The distinct syntactic behaviour of these three elements is due to the fact that they bear different feature specifications. According to her analysis, definite articles, demonstratives, and pronouns share the +definite feature. The first is actually underspecified for definiteness, while the last two are inherently specified (see also Lyons 1999 as mentioned above). Demonstratives are also +deictic, while pronouns are not. However, both demonstratives and pronouns can be used anaphorically or ostensively, thus differing from definite articles. Finally, while the definite article bears no person specification, demonstratives and pronouns do. Giusti (2001), following Giusti (1993) and Brugè (1994), argues that the demonstrative occurs in a position lower than that of the definite article (and the same holds for pronominals), from where it (usually) moves to SpecDP, as shown below (2001:159) (and in fact lower than NumP, as we will see in the following sections):

(4) $[_{DP}$ {DemP/DP_{pron}} $[_{D}$ Article] [.. $t_{Dem/DP}$ ..]]

While demonstratives and pronouns start lower down in the nominal structure and move to SpecDP, the definite article is directly merged in D. Thus the only way for demonstratives and pronouns to relate to D is via movement.

This approach extends then to the reanalysis of demonstrative *ille* as the definite article. According to Giusti (2001) *ille* is reanalysed as a D head, as shown in (5):

(5)


Until the dropping of the first syllable, either of the two structures was possible. The trigger for the reanalysis in (5b) was the phonological weakening of *ille* coupled with the loss of case morphology. The underlying assumption is that Case features reside in D and need to be checked by N-to-D movement. Latin had a rich case system; thus Case features would in any case be visible at PF, allowing for N movement to procrastinate. Giusti (2001:168) illustrates this point with the following example from Seneca (*Ad Marciam de consolatione*):

(6) a. *vir* ille fortissimus (1.7)
man-sg-nom that-sg-nom very-strong-sg-nom
'That very strong man.'

b. ultimam illam *faciem* rerum (5.4)
last-sg-acc that-sg-acc aspect-sg-acc thing-sg-gen
'That last aspect of things.'

c. ultima filii *oscula* (3.2)
last-pl-acc son-sg-gen kiss-pl-acc
'The son's last kisses.'

In (6a) N precedes the demonstrative and the adjective; in (6b) it follows them but precedes the genitive; in (6c) it is in final position, following the genitive. So nouns in Latin could stay in the lower position, move to an intermediate head (an Agr position) or move higher. In order to account for this optionality, Giusti argues that the different positions of N reflect different parts of the derivation where spell-out takes place; rich morphology suffices to make the D-to-N chain visible even without movement. Once this morphology is lost (or weakened), the alternative way to make this chain visible is by merging an article.

Despite the differences in technical detail, the two analyses just summarized share a common assumption: the development of the definite article is not independent of the syntactic structure it occurs in. Lyons (1999) argues that the feature +demonstrative was lost, while Giusti (2001) does not invoke a demonstrative feature; instead she argues that the difference between demonstratives and definite articles is the presence versus absence of a +deictic feature. Despite the different features invoked, the crucial point is that both accounts argue for

the loss of a feature. Lyons (1999) attributes the loss of the relevant feature to the earlier restructuring of the pronominal system of Latin (cf. Harris 1978, Vincent 1997), while Giusti (2001) relates it to the loss of morphological case. It is possible that both changes were a prerequisite for the reanalysis that took place, although not sufficient for it. Finally, both approaches argue that there is a dependency formed between the demonstrative, which occurs in a lower functional position in the nominal structure, and the D head. This relation is mediated via movement.

The above accounts are compatible with our approach to grammaticalization in the sense that they invoke structural reanalysis. If demonstrative *ille* raised to D (from Dem), then its reanalysis as a definite article implies loss of Dem-to-D movement, that is, a Move > Merge change. It may be true, as argued by Giusti (2001), that the trigger was the loss of morphological case which then necessitated the presence of a lexical item in D.[2] In connection to this, and in order to explain the different positions of N inside the DP (cf. (6)) we could say that either N or the demonstrative could move to D. When case morphology is weakened, N movement becomes more restrictive, making Dem movement a more prominent candidate. Once this movement is established, the next step involves merger of the demonstrative in D. Notice that due to the Move > Merge reanalysis (of D*) the lexical item in D no longer bears the feature associated with Dem (demonstrative, deictic, or more generically some locative feature). As a result of this, it is identified purely with the features provided by D ('Definiteness' for Lyons 1999, 'Referentiality' for Longobardi 1994), assuming, following Lyons, that demonstratives are inherently definite. We will elaborate more on the properties of D and more generally on the functional projections inside the DP in the sections that follow.

4.2 Negative words and related expressions

4.2.1 Some remarks on negation

The purpose of this section is to analyse the development of negative words (n-words) of various types, showing how, despite initial appearances, these elements fit into the general framework we are developing. Our main focus is

2. The role that morphological case may play has been discussed also in the context of the development of the Germanic article (for recent discussion see Abraham 1997, Philippi 1997 and references cited there). More precisely, according to Philippi (1997) the feature of Referentiality can be expressed either directly on N, in which case we see a different case marking, or as a distinct lexical item, namely a definite article. The definite article in Germanic has also developed out of a demonstrative, thus following more or less the same 'path of grammaticalization' as the Romance one. See also Batllori and Roca (2001) for a discussion of the article in Spanish.

on the history of n-words in French. A striking aspect of the history of these elements is that they appear to have developed a negative meaning in their recorded history; the antecedents of the Modern French n-words could all be positive expressions in Old French, as shown in detail in section 4.2.2.[3] We will argue that this change is in fact connected to the loss of properties of the relevant elements: the DPs whose NP these words originally headed lost their independent quantificational force and so had to become part of an *Agree* relation involving the Negative feature, leading to these elements taking on negative meaning. Related developments were the reanalysis of these nouns as elements of Num, as we shall see, and the reinterpretation of the null D as negative (in this, as in a number of aspects of our analysis of French negation, we draw on the insights of Déprez (1997, 1999, 2000)). In section 4.2.3, we turn our attention to the well-known development of clausal negative words from paucal terms or minimizers. We regard this, rather straightforwardly, as reanalysis of N as Neg. We also discuss Jespersen's (1917) negative cycle.

Negation in Modern French is typically marked by two elements, a preverbal clitic *ne* in combination with a postverbal substantive negation:[4]

(7) a. Jean **n'** a **pas** vu Marie.
John neg has not seen Mary
'John has not seen Mary.'
b. Jean **n'** a **rien** fait.
John neg has nothing done
'John has done nothing.'
c. Jean **n'** a **jamais** dit cela.
John neg has never said that
'John has never said that.'
d. Jean **n'** a **aucun** espoir de gagner.
John neg has no hope to win
'John has no hope of winning.'
e. Jean **n'** a vu **personne**.
John neg has seen no one
'John hasn't seen anyone.'
f. Jean **n'** a **plus** d' argent.
John neg has no-more of money
'John has no money left.'

3. Martins (2001) shows that a partially similar change has taken place in other Romance languages. However, while the other Romance languages changed certain items from polarity items to n-words, French developed an entirely new class of polarity items/n-words from formerly positive expressions. The only other Romance language that seems to have done this is Catalan, which has rather unusual properties in other respects (see Martins 2001:197–198).
4. The 'substantive' negation is postverbal only in finite clauses. It precedes a (main-verb) infinitive. We attribute this to the operation of verb-movement in finite clauses – see Pollock (1989).

The Old French (OF) system was quite different to this, as we shall see below. Before looking at the OF system, however, we introduce our assumptions about the representation of negation in general, comparing English, French and Italian. The presentation adopts and adapts recent ideas of Déprez (1997, 1999, 2000), Haegeman (1995) and Zanuttini (1997).

Our analysis of negative concord relies extensively on the notion of *Agree* (in the sense of Chomsky 2001) as a relation between elements bearing the Negative feature. We define *Agree* as follows (see Chomsky 2001:3–4):[5]

(8) α *Agrees* with β where:
  i. α and β have non-distinct formal features;
  ii. α c-commands β;
  iii. there is no γ non-distinct in formal features from α such that γ c-commands β and α c-commands γ.

Where these conditions are met, α is referred as the *Probe* and β the *Goal* of the *Agree* relation. For our purposes, different types of *Agree* relation are defined in terms of their feature content. A Negative *Agree* relation is thus an instance of *Agree* in the sense of (8) where the Probe and Goal share the feature Negative. Thus for γ to break the *Agree* relation between α and β, γ must be specified as Negative. In other words, γ must be a negative element independent of α and β.

The *Agree* relation involving the Negative feature is very similar to Haegeman's (1995) notion of negative chain. Our approach differs from Haegeman's, however, in that we follow Déprez (2000) (who follows Ladusaw 1992) in taking negative elements to be indefinites and in taking the cross-linguistic variation in the morphosyntactic realization of negation to be connected to intrinsic properties of negative words and negative operators, rather than to the position and the structure of NegP.

Before presenting a brief sketch of an analysis of English, it is necessary to introduce some general assumptions. First, we define sentential negation as follows (cf. Acquaviva 1996:298):

(9) Sentential negation = closure of the temporal variable by a negated existential

The existential in question we take to be introduced as a facet of the temporal representation. We take a sentence like (10) to have the temporal representation in (11):

5. We omit reference to the distinction between interpretable and uninterpretable features; cf. the discussion in Chapter 1, section 3. In all cases discussed here, α and β are heads.

(10) John left.

(11) $\exists t[t > t_o]$ (AT (e,t) & leave (e,j))

Example (11) states that there is a time *t*, which precedes the speech time t_o, and the event of John leaving took place at *t*. In neo-Reichenbachian terms we can take T to provide the Reference Time which gives the restriction on the temporal quantifier, that is, $[t > t_o]$. We can thus, perhaps rather simplistically, take $[t > t_o]$ as the denotation of the feature [Past] (cf. Stowell 1996:279). The Speech Time is contextually given, presumably via C, as in Enç's (1987) theory of T anchoring. The temporal quantifier is associated with C, or more precisely with the M head discussed in Chapter 3 (see also the analysis of the temporal properties of Greek *na*-clauses in Roussou 1999). AT may correspond to an aspectual head (giving a punctual reading here, as opposed to other aspectual operators one may imagine). AT relates the Event Time to the Speech Time and the Reference Time; we take the Event Time to be an argument of the predicate (cf. Higginbotham 1985).

(11) relates to the structure of (10) as follows:

(12) $\exists t[t > t_o]$ (AT (e,t) & leave (e,j))
M T Asp V

The existential in M is thus what is negated, giving rise to sentential negation. This implies that sentential negation must be interpreted as having scope over M, a matter which has a number of implications which we will leave aside here. The clear implication is that since negation is not realized in the C system in all languages, scope properties cannot be directly read off overt morphosyntax. This is, of course, an entirely standard observation. Given the relation between C, T and Asp/V (mediated via *Agree*) we expect that negation can in principle be realized in any of the three domains defined by these heads, namely (a) above V, or (b) above T, or (c) above M, as shown in (13) below:[6]

(13) (Neg) – M – (Neg) – T – (Neg) – V

Greek is a language where arguably negation is realized in the C domain (above M) as its sensitivity to Mood distinctions indicates (cf. Roussou (2000), and the discussion in Chapter 3, section 3.1). Italian is a typical example of negation in the T domain, while German provides an instance of negation being realized in the lower part of the clause. The three cases are illustrated in (14a), (14b), and (14c) respectively:

6. For the availability of three different Neg heads in English, see Cormack and Smith (2000).

(14) a. *Dhen* tha dhiavaso to vivlio.
not prt read-1sg the book
b. *Non* leggerò il libro.
Neg I-will-read the book
c. Ich werde das Buch *nicht* lesen.
I will the book not read
'I won't read the book.'

As the examples in (14) show, the position where negation is spelled out is subject to parametric variation.

Bearing the above observations in mind, we can now turn to the negated arguments which are realized by an *Agree* (Neg, D) relation, interpreted as '*for no x... x*'. In this case, the variable is supplied by the negated argument; we take this to imply that negated arguments are indefinites in the sense of Kamp (1981), that is, open variables (see also Heim 1982). The quantification is supplied by *Agree* between Neg and M in the C system (which in turn relates to T and Asp/V; recall that the existential is structurally located in M) and the quantifier-variable relationship is established by extending this relation to D just where D lacks intrinsic quantificational force (i.e. in the case of n-words and polarity items, as we shall see below).

Finally, we propose the following PF realization condition on *Agree*:

(15) A (possibly iterated) Agree relation ($\alpha_1 \ldots \alpha_n$) is PF-licensed iff there is some $[_{\alpha i}$ F*] which asymmetrically c-commands all $[_{\alpha j>i}$ G*].

Example (15) requires that *Agree* relations involving the negative feature have an overt negative morpheme in the structurally highest phonologically realized position and non-distinctness requires that all other overt negative morphemes in the chain be interpreted as part of a single negation with the highest phonologically realized negative element. The non-distinctness clause in the definition of *Agree* given in (8i) implies that if G* is unable to function as a Goal, then G* breaks the *Agree* relation between F* and any position c-commanded by G* and having the relevant feature content. For the simple case of a single negated argument, the *Agree*(Neg, D) relation required for the interpretation of negative arguments has three possible realizations:

(16) a. (Neg*, D)
b. (Neg, D*)
c. (Neg*, D*)

We assume that *Agree*(Neg, D), that is, where neither Neg nor D is realized by an overt negative morpheme, is ruled out for Negative, since negation, as an

inherently marked property in relation to positive polarity, must be morphologically marked in order for the chain to be identified (valued) as negative. The other possibilities are instantiated parametrically in various languages, as we will now describe.

We begin by briefly describing some salient points of English negation. The purpose of this is not to give anything like an exhaustive treatment of the situation in English, but rather to illustrate some of the mechanisms introduced above. The basic paradigm regarding the expression of negation in English is summarized by the following examples:

(17) a. I saw nothing.
b. I didn't see anything.
c. I didn't see nothing.
d. *I saw anything.

In (17a), negation is not realized as a separate morpheme (Neg) in the T system, but on D – this is thus a case of (16b): (Neg, D*). Note that we can fairly straightforwardly take *no* to be a D, with *thing* the NP complement. The impossibility of DPs like **no a man,* **no the man,* **no many linguists,* **no every man,* **no no man* supports treating *no* as a D (but see Acquaviva 1996 for a different interpretation of this fact). The *no*-words of English are weak in Milsark's sense (and in Barwise & Cooper's (1981) sense, cf. (18b)):

(18) a. There is no one in the garden.
b. Nothing is a thing.

(17a) thus receives the interpretation 'There is no *x, x* a thing, such that I saw *x*'. We take no view on how the scopal properties of this or other operators are determined (or on more complex and ambiguous cases like Klima's (1964) *I will force you to marry no one* – cf. Kayne 2000 for a recent treatment).[7] The NP denotation provides the restriction on the quantifier denoted by the (Neg, D) chain. So (17a) is interpreted as follows:

(19) ¬∃x [thing(x)] ∃t [PAST(t)] (AT (e,t) & see (e,I,x))
D NP (M,T)

In (19) we effectively claim that the denotation of *no* is ¬∃x. The other existential is introduced in M as part of the tense/mood specification of the clause.

7. It is natural to contemplate a QR-like operation, but see Kayne (2000). Linking the interpretation of negative arguments to Tense makes possible an account of the scope ambiguity illustrated by Klima's example based on 'restructuring' phenomena if these are seen as involving extended Tense relations as in Roberts (1997b). Kayne (2000) also notes a connection between scope of negation and clitic-climbing, cf. also Déprez (1997).

In (17b), clausal negation is overtly realized as *n't*.[8] This element combines with *anything* to form a single negation. So here we have *Agree*(Neg, D), where Neg is *n't* and D is *any*. Clearly, *n't* morphologically realizes the negative property of the chain on T, in conformity with (15), that is, this is an example of (16a): (Neg*, D). *Any*, on the other hand, is not intrinsically negative, as its appearance in non-negative environments shows (e.g. *Did you see anyone?* etc.). It is clear that DPs headed by *any* are weak:

(20) There isn't anyone in the garden.

The interpretation of (17b) is illustrated in (21):

(21) $\neg\exists$x [thing(x)] $\exists$t[PAST(t)](AT (e,t) & see (e,I,x))
n't DP/NP T

As with *nothing*, the NP *thing* gives the restriction, the D provides the variable, *Agree*(Neg, D) the quantifier-variable relation, and so (17b) is interpreted as 'There is no x such that I saw x', like (17a).

Example (17c) can only be interpreted as double negation (in Standard English). This is because both *no* and *not/n't* introduce negation. Because of this, where *not/n't* is realized higher in the chain, *no* cannot be interpreted as part of the same chain. But *no* must be interpreted as negative, hence it must head a separate neg-chain, hence double negation.[9] We can capture this property of *no* by saying that it cannot be the Goal of *Agree* (in Chomsky's terms, it must have an interpretable Negative feature).

Finally, (17d) is an example where the licensing condition on *any* is not met. *Any* must *Agree* with a downward-entailing operator, such as negation (17b), Q, *if*, the restrictive clause of *every* or the comparative operator. If *any* does not *Agree* in this way, it simply cannot be interpreted (we leave 'free-choice' *any* aside; for a brief discussion of this item, see 4.4). So, *any* must be a Goal. Notice that a formulation in terms of uninterpretable features as in Chomsky (2000, 2001) is problematic in that we cannot say that *any* has an uninterpretable negative feature, as it clearly doesn't have to be negative. It seems more reasonable to say that it is lacking in quantificational force and so must be licensed by a quantificational element of a particular kind, that is, a non-veridical or an anti-veridical operator in Giannakidou's (1998, 2000)

8. A full consideration of the position and nature of *not/n't*, negative contraction and the mechanism triggering *do*-support is beyond the scope of this section. See Roberts (1998) for some proposals.
9. Varieties of English where (17c) is grammatical as single negation are those where *no* does not have to be interpreted as negative, and hence the *no*-DP can agree for Negative and a single-negation interpretation results.

sense. In other words, *any* is more like a 'wild' card, which assumes different interpretations depending on the element it is associated with.[10]

So, we see that English allows negation to be realized either as a Neg morpheme in the clause structure or as part of the D system (i.e on D). In Standard English, the true negative D *no* is inherently negative, and as such incapable of Agreeing with a c-commanding negative element. For this reason, Standard English lacks negative concord. On the other hand, *any* requires an operator to license it, one of the possible licensors being clausal negation. We see how different lexical items instantiate the possibilities for realizing negation listed in (16), and how these interact with the well-formedness conditions on *Agree* given in (8) and (15).

Let us now turn to the Romance languages. As is well-known, the modern Romance languages show negative concord (NC). The Standard Italian paradigm is illustrated in (22):

(22) a. *Non* ho visto *nessuno*.
Not I-have seen no-one
'I haven't seen anyone.'
b. *Nessuno* (**non*) mi ha visto.
No-one (not) me has seen
'No one has seen me.'
c. *Non* mi ha visto *nessuno*.
Not me has seen no-one
'No one has seen me.'
d. *Ho visto *nessuno*.
I-have seen no-one
e. *Non* ho detto *niente* a *nessuno*.
Not I-have said nothing to no-one
'I have said nothing to no one.'

Arguably Neg in Standard Italian is part of the T system (cf. Belletti 1990, Zanuttini 1997). In (22a), the n-word *nessuno* functions like polarity *any*: it enters an *Agree* relation with *non*, giving (Neg*, D*), that is (16c).[11] Again, the

10. The grammar does in fact allow for elements which can assume different content depending on the elements they are associated with. Another example is the clitic *si* in Italian (and its counterparts in the other Romance languages), which can be interpreted as a reflexive, impersonal or passive morpheme (see Uriagereka 1997 for an approach along these lines, and Manzini & Savoia 2001).

11. In fact, non-negative *nessuno* can appear in other polarity-licensing contexts, reinforcing the similarity with *any* (Rizzi 1982:122):

(i) Mi chiedo se Gianni abbia contattato nessuno.
Myself I-ask if Gianni have(subjunctive) contacted anyone
'I wonder whether Gianni has contacted anyone.'

DP provides the variable, while *Agree*(Neg, D) provides both the quantifier and the quantifier-variable relation.

In (22b), *nessuno* identifies the Agree relation as Negative. Being in a preverbal position, it is possible to assume that it directly realizes Neg*, and therefore *non* cannot appear, for the same reason that *no* cannot appear in the English example (17c): it must be interpreted as introducing its own negation and cannot do so if it *Agrees* with a c-commanding Neg* element (the D of *nessuno*) – that is, it cannot be a Goal. *Nessuno*, on the other hand, as (22a) shows, is not obligatorily interpreted as introducing its own negation, although it must be so interpreted when it is the highest PF-realized element in the *Agree* relation, following (15) (this is also why it is interpreted as negative in isolation – cf. Zanuttini 1997). So *nessuno* can be either a Probe or a Goal (it is again unclear whether this could be glossed as possessing an optionally Interpretable Negation feature; cf. also note 5). In (22c), on the other hand, the 'freely inverted' subject does not realize Neg* above T; instead, *non* appears as the head of the chain and *nessuno* appears lower in the chain, as in (22a).

Putting these observations together with what we said about English above, we have the following tripartition with respect to the *Agree* relation for Negation:

(23) a. Items which must be Probes and cannot be Goals: *not, non, no*+NP
b. Items which can be Probes or Goals: Italian n-words
c. Items which cannot be Probes and must be Goals: *any*+NP

This actually exhausts all the possibilities, if we assume that the *Agree* relation for Negation must have a PF realization (see (15)). Naturally, we would like to find a correlate for the distinction between negative words like (23a) and those like (23b). One possibility is that morphemes whose entire content is negation are those of type (23a). To put it another way, if a morpheme expresses negation without expressing a restriction, it is of type (21a). This is clearly true for *not, non* and English *no* and is consistent with the idea that functional heads must express logical content like negation (see von Fintel 1995, Roberts & Roussou 1999 and Chapter 5).

What we have said so far allows (22d), on a par with English *I saw nobody*. So we need to add a further observation about Italian, regarding the

(ii) Mi chiedo se nessuno abbia contattato Gianni.
Myself I-ask whether anyone have(subjunctive) contacted Gianni
'I wonder whether anyone has contacted John.'

As these examples show, there is no subject–object asymmetry here. It is clear that +Wh *se* licenses *nessuno*. The same is true of at least *personne* and *aucun* in French (Martins 2001:200, 218–219).

realization of Neg by *non*: Italian has (Neg*, D*) and (D*, Neg) (i.e. *non . . . nessuno, nessuno . . .* $\emptyset$), but neither (Neg, D*) nor (D*, Neg*) (i.e. *$\emptyset$ . . . *nessuno,* **nessuno . . . non*). Example (22e) illustrates the fact that multiple *Agree* relations are allowed, as long as each has *non* as Probe. The branching chains give a multiple-quantification interpretation ‘there is no person *x* and no thing *y* such that I said *x* to *y*’.

Turning now to Modern French, we find a situation which is substantially the same as that in Italian, with one important difference. Compare the following with (22):

(24)
a. Je *n'*ai vu *personne*.
I neg-have seen no one
‘I have seen no one.’
b. *Personne* *ne* m'a vu.
No one neg me-has seen
‘No one has seen me.’
c. Je *n'*ai *pas* vu Marie.
I neg-have not seen Marie
‘I haven't seen Marie.’
d. *Je *n'*ai *pas* vu *personne*.
I neg-have not seen no one
e. *Personne* *ne* m'a *pas* vu.
No one neg me-has not seen
‘No one hasn't seen me.’

Example (24a) looks exactly like (22a); we can analyse *ne* as the instantiation of negation in the T system, and *personne*, like *nessuno*, as the realization of the negated argument which *Agrees* with Neg.

On the other hand, (24b) differs minimally from (22b) in that clausal negation *ne* is required.[12] This implies two things, given the above discussion: first, negation is always realized in the T system in French and, second, *ne* is a sentential negation of type (23a).

Example (24c) illustrates the well-known double expression of negation in French. This is allowed by our system; clausal negation simply has two realizations in an *Agree* relation. (24d) is ungrammatical because no well-formed *Agree* relation can include all of *ne, pas* and *personne*. If we assume that *pas* cannot be a Probe (i.e. it is of type (23c)), then *Agree* (*ne, pas, personne*) cannot hold. For the same reason *pas* and *personne* cannot Agree. Agree (*ne, personne*)

12. *Ne* is most frequently omitted in spoken French and in informal written French. In the relevant registers, though, *ne* is required here.

violates the locality condition on chains given in (8iii).[13] Finally, in (24e), which according to Déprez (1997:114), is 'very marginal' and 'Always ha[s] a double negation reading', *personne* and *pas* fail to *Agree*, again due to locality.

The above remarks, although they leave a number of questions open, are sufficient to illustrate the ideas and mechanisms that we will exploit in the account of the diachronic development of certain negative words in French. The central ideas are the definition of *Agree* as in (8), the PF condition in (15) and the possibilities of parametric variation seen in (16).

Having outlined the basic assumptions of our analysis, we are now in a position to consider the development of n-words in the history of French.

4.2.2 The development of French n-words

The basic observation about earlier stages of French that we are interested in here is summarized by the following quotation from Foulet (1990:244):

> Si *ne* est la négation essentielle du vieux français et n'a besoin d'aucun secours étranger pour exprimer l'idée négative, il est vrai pourtant que depuis longtemps on aime à la renforcer par une série de mots dont l'emploi est parfois bien curieux. Ces mots, à une exception près, . . . tiennent leur valeur négative uniquement de leur association avec *ne*, et il est impossible de les employer au sens négatif sans les faire précéder ou suivre de *ne*.[14]

This phenomenon is illustrated by the following examples, which have been translated directly into Modern English on the basis of Foulet's translations into Modern French and his comments:

(25) *Nul* ('any'):

a. Cuidiez vous, se me disiiez
vostre conseil celeement
que jel deïsse a **nule gent**. (*La Chastelaine de Vergi* 318–320; Foulet, p. 245)
'Do you think, if you tell me your advice secretly that I would tell to (just) anyone'

13. What is not clear is why *personne* cannot head its own chain, giving rise to a double-negation reading. It seems that where *personne* is c-commanded by Neg in the relevant local domain (approximately the clause, for our purposes – see Déprez 1997), it must be a Goal, but here *pas* prevents this, because *pas* must be a Goal and cannot be a Probe.

14. 'Although *ne* is the essential negation in Old French and needs no extra help to express the idea of negation, it is nevertheless the case that from an early stage there is a preference to reinforce it with a series of words whose usage is sometimes rather curious. These words, with one exception, . . . take their negative value purely from their association with *ne*, and it is impossible to use them with a negative meaning without *ne* preceding or following them' (IGR's translation).

b. Estre morte o lui me fust mieus
que vivre si que de mes ieus
ne le veïsse **nule foiz**. (*La Chastelaine de Vergi* 805–807; Foulet, p. 246)
'To be dead or him(?) would be better for me than to live if I didn't see him any time with my eyes.'

(26) *Plus* ('more'):
je n'ai or **plus d'argent** (*Le Jeu de la Feuillée* 554; Foulet, p. 249)
'I haven't got any more money' (vs. ModFr 'I haven't any money')

(27) *Onques* ('(n)ever'):
a. conment qu'il **onques** en aviegne (*Courtois d'Arras* 66; Foulet, p. 252)
'how it might ever happen'
b. Et dist li dus: 'Ce n'avint **onques** . . .' (*La Chastelaine de Vergi* 349; Foulet, p. 252)
'And the duke said: "That didn't ever happen" '

(28) *Aucun* ('some'):
a. **Aucuns** se sont aati . . . (le Bossu, *Le Jeu de la Feuillée* 438; Foulet, p. 246)
'Some people have boasted . . .'
b. k'il **n'**aient de vous **aucun bien** (*Le Jeu de la Feuillée* 671; Foulet, p. 247)
'That they won't have any good(s) from you'

(29) *rien*, still could be a feminine noun:
a. Douce **riens** por cui je chant (Muset, *Chansons* VIII, 44; Foulet, p. 273)
'Sweet one for whom I sing'
b. . . . li feus,
qu'il **ne** pooit por **riens** estaindre
(Huon le Roi, *Le Vair Palefroi* 204–205; Foulet p. 279)
'. . . the fire that he couldn't put out for anything'

In fact, we can distinguish two different phenomena here. In (25–27) we most likely have polarity items (the (a)-examples all have the verb in the subjunctive, a *wh*-word or a negation), while in (27) and (28) we have positive readings.

Personne also had a positive reading in earlier French:

(30) Je ne connais **personne** si heureuse qu'elle (Vaugelas, Déprez 1997:54)
'I don't know a person as happy as her'

Here *personne* is a feminine noun, as the feminine form of the adjective *heureuse* shows. We will comment below on the lack of an article here. Compare also the following comment from the Robert *Dictionnaire historique de la langue française*: 'Dès les premières attestations, le mot désigne un être humain quelconque avec une valeur positive qu'il conserve dans les phrases negatives et

hypothétiques' (1488)).[15] *Personne* seems to have developed into an n-word later than *aucun* and *rien*; in the seventeenth century it could still appear directly modified by an adjective, as in:

(31) Il n'y avait **personne** aimable.
There neg-there was person friendly
'There wasn't a friendly person there.' (Robert, *Dictionnaire historique, ibid.*)

In Modern French, *de* is required where *personne* is modified by an adjective: *personne d'aimable* ('no one friendly'). In this respect, *personne* patterns with other quantificational elements, cf. *quelqu'un/rien d'aimable* ('someone/nothing friendly'). Déprez (2000) argues that this property is connected to the fact that these quantifiers occupy a high position in the DP.

It seems clear that all the above words were indefinites, interpreted as having existential quantificational force (*plus* must have been a scalar quantifier of some kind). As indefinites, these elements interact scopally with negation, and as such are able to be interpreted in or out of the scope of negation. It seems, then, that these elements were neither n-words nor negative quantifiers in Old French (OF).

Diachronically, these elements turn into n-words with the properties described and analysed in the previous section (except *onques*, which disappears and is replaced by *jamais*, a compound of *ja* ('ever') and *mais* ('more'), both of which were like the items in (25–29) in OF). In terms of the general account of negation given above, this implies that these elements underwent a diachronic change such that Agreeing with the clausal negation became obligatory. They became elements which are associated with negative quantification and specify a restriction on that quantifier. In terms of the typology in (23), the OF elements in (25–29) were of type (23c) (i.e. they could not be Probes, must have been Goals), and the Modern French ones are of type (23b) (i.e. they can be Probes or Goals), since they obligatorily introduce negation. The elements in (28)–(31) were simply not negative, although they are now of type (23b) (but cf. note 11). So there are two changes to account for here: the development of certain positive nouns into negative elements of type (23b) (cf. note 13), and the development from (23c) to (23b). Let us look at these in turn.

Regarding the positive-to-negative change, what seems to have happened is that the original Nouns were reanalysed as quantificational elements. We adopt

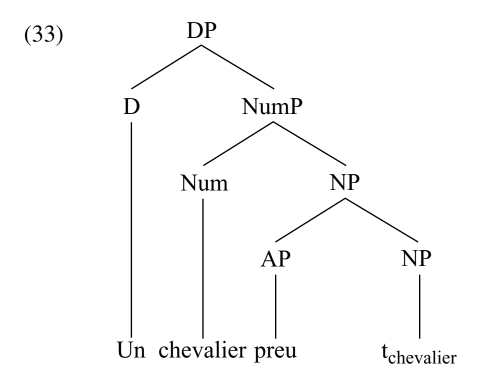
15. 'Since the earliest attestations, the word designates any human being with a positive value which is retained in negative and hypothetical sentences' (IGR's translation).

a tripartite structure for DPs as in (32) (cf. Bernstein 1991, 2001, Ritter 1991, Zamparelli 1996):[16]

(32) $[_{DP}$ D $[_{NumP}$ Num $[_{NP}$ N]]]

In these terms, we can analyse this change as N > Num. More generally, we assume that the usual postnominal position for adnominal APs in OF (like Modern French) indicates general N-to-Num movement (cf. Longobardi 2001b:579–580 and the references given there), as in:

(33)



'A noble knight'

Num is also the position for certain quantifiers (Zamparelli 1996), and so we can assume that this is the position for *rien* and similar elements in Modern French (this position can take the *de*-phrase as its complement – see Kayne 1994 for an analysis). So, if N-to-Num movement was lost for these elements, we can explain the change in distribution (loss of adjectival modification), the change in meaning (from the descriptive content of the Noun to the restriction on the quantifier) and the loss of phi-features (these elements are no longer Nouns and so can no longer enter the relevant *Agree* relations with Num and perhaps other N-licensing heads such as Dem (see 4.1 and note 16)).

But how did this change take place? Here we follow Déprez's (1999) analysis. Déprez observes that Modern French DPs (almost) always require an article:

(34) Jean a mangé *(des) pommes.
John has eaten (some) apples.

16. In the previous section we discussed demonstratives, which occupy a distinct position inside the DP, namely a DemP, situated below NumP. Given that this position is not relevant for our discussion we gloss over it here and simply assume the tripartite (instead of the ternary) structure in (33). In the next sections, we will introduce a Q position above DP, following a proposal of Cardinaletti and Giusti (2002).

She further observes that this wasn't the case in earlier French. In OF, null Ds are found with singular mass Nouns and with bare plurals, much as in English or (in the right syntactic context – see Longobardi 1994b) in other Romance languages:

(35) a. Si mengierent **pain** et burent **cervoise**
So they-ate bread and drank beer
'So they ate bread and drank beer' (*Gr*. 129, 1–3; Foulet 1990:62)

b. . . . en ma bourse grande a il **deniers** a grant planté
in my purse big has there coins in great plenty
'in my big purse there is money in great plenty' (*Av*. 203–4; Foulet 1990:63)

So we observe that French lost a class of null indefinite determiners; these were replaced by *un(e), des* and, for generic plurals (corresponding to bare plurals in English and many other languages), the plural definite article *les*. We observe then that French Ds developed the property of always having to be filled. In terms of the notation for parameters adopted here, French developed D^{*}_{Merge} for all cases of D but two – see below.

In this connection, Déprez (1999:416) points out that: 'an attractive conjecture is that in environments from which bare NPs gradually disappeared, the use of *rien* and *personne* survived by . . . being incorporated into the obsolete indefinite determiners that preceded them'. We would like to develop Déprez's conjecture here. Suppose, following Longobardi (1994b, 2001b) that Ds give nominals their referential properties. Now, it is clear from examples like (35) that OF had null indefinite Ds, as Déprez also points out. Once these were lost, presumably owing to the extension of the use of the indefinite article and 'partitive' *des* (cf. Foulet 1990:54f.), DPs with null Ds could no longer be referential. The only Nouns which could survive in this context were those capable of being interpreted as non-referential, for example as negative quantifiers. Hence *rien, personne* (and for a time a small number of others including *chose* ('thing') and *âme* ('soul') (Foulet 1990:275f.)) could remain in such DPs, but had to be interpreted as quantifiers. The 'generic' descriptive content of these Nouns was reinterpreted as the restriction on a quantifier. To the extent that these items then became polarity items, the semantic change can be roughly schematized as λx *(thing/person (x)) > (thing/person (x))*. This change is strikingly similar to the one which affected the English modals discussed in Chapter 2, section 2.1: a small number of lexical items is reanalysed as functional, losing certain morphological properties (here phi-features) and changing in meaning such that descriptive content is replaced by logical content. As in the case of the English modals and numerous other changes we have seen, the change is structurally upward and the mechanism is the loss of movement.

Let us turn now to the change from polarity items to n-words. Clearly this involved these elements taking on a negative feature, and an associated restriction in distribution to negative contexts. Clearly, this is a change from type (23c) to (23b) above, as we have already pointed out. We suggest that this change is bound up with the loss of null indefinite Ds in French, which we have already mentioned, and the development of a null *negative* D in examples like:

(36) Jean n'a pas mangé [e de pommes]
John neg-has not eaten of apples
'John has not eaten (any) apples.'

This is the only case of a null D in Modern French;[17] significantly, it is negative. The development of this construction supports our approach. In OF, this construction did not exist (see the detailed discussion in Foulet 1990:73ff., 264ff.). Instead, a singular negative indefinite typically lacked an overt article altogether:

(37) a. je ne nourriroie trahitor
I neg would-feed traitor
'I would not feed [a] traitor' (*Ch*. 1223–1224; Foulet 1990:73)
b. Offrande hui mais n'i prenderai
offering today more not-there I-will-take
'I will take no more offerings today' (*F*. 570; Foulet 1990:59)

Null indefinite Ds were also common in interrogatives and conditionals:

(38) a. S'anmie volés avoir . . .
If enemy you-want to-have . . .
'If you want to have an enemy . . .' (*C*. 188; Foulet 1990:58)
b. Avés vous dont borse trovée?
Have you then purse found
'Have you then found a purse?' (*C*. 262; Foulet 1990:58)

This D is presumably distinct from the one illustrated in (35), as it appears with singular Nouns and (at least most commonly) in polarity contexts. In fact, from Foulet's commentary, it appears that in twelfth-century OF at least, the

17. Except in indefinites with the 'partitive article' where the head Noun is premodified by an Adjective:

(i) a. J'ai acheté **du** pain.
I've bought of-the bread
'I've bought some bread.'
b. J'ai acheté **de** bon pain.
I've bought of good bread
'I've bought some good bread.'

Kayne (1984:79) suggests that this *de* is an article, rather than there being a null determiner or quantifier here.

overt indefinite appeared in specific indefinites and a null indefinite in non-specifics. The null article is used 'si l'individualité ne ressort pas nettement, si nous avons affaire à un type plutôt qu'à un individu, ou si l'individu nous est présenté comme devant satisfaire à telles ou telles conditions qui pourront être ou ne pas être remplies' (Foulet 1990:56).[18] This looks like a good informal characterization of non-specificity.

We follow Foulet (1990:264f.) in taking the development of the null negative D, associated with *de*, as being a reflex of the development of the clausal negator *point*. *Point* was originally a Noun (and indeed still survives in Modern French as Noun meaning approximately 'point') which could appear in both positive and negative contexts optionally followed by the partitive *de* in OF with the sense of a paucal term, roughly translatable as a 'little bit'. In the terminology of Bolinger (1972) and Horn (1989), *point* was a minimizer, in that it denoted a scalar end point: the smallest possible unit of something (this usage corresponds exactly to the definition of a point in Euclidean geometry as the smallest unit on a line). Here are examples of *point* in positive contexts (albeit *if*-clauses, and thus polarity contexts) with and without a following partitive *de*:

(39) a. . . . ja por rien nel te deïsse se **point de**
already for nothing not-it you I-would-say if bit of
ton bien i veïsse
your goods there I-would-see
'I would not tell you if I saw the smallest piece of your goods'
(*P*. 7261–7263; Foulet 1990:268)

b. Dites se vos la veïstes et se vos **point** li anqueïstes
Say if you her see and if you bit her ask
qui ele est
who she is
'Say if you see her and if you ask her at all who she is' (*P*. 8691–8693; Foulet 1990:267)

Here are examples of *point* with the same sense in negative contexts:

(40) a. cel aweule la qui n'a **point d'argent ne de**
That blind-man there who not-has bit of money nor of
houce ausi?
clothes too
'that blind man who doesn't have a single bit of money nor clothes'.
(*Av*. 232–234; Foulet 1990:266)

18. 'If the individuality [of the referent of the Noun – IGR] is not clearly brought out, if we are dealing with a type rather than with an individual, or if the individual is presented to us as having to satisfy such and such conditions which may or may not be fulfilled' (IGR's translation).

b. Ma vie ne me plest **point**.
My life not me pleases bit
'My life doesn't please me one bit.' (*Ch.* 819; Foulet 1990:267)

In the (a)-examples, the verb is always transitive, and *point* can be interpreted as the head of the direct-object DP taking a partitive PP complement. Thus the relevant part of the structure of (40a) would be as follows:

(41) V [$_{DP}$ [$_{D}$ Ø] [$_{NumP}$ [$_{Num}$ point] [$_{NP}$ t$_{point}$ [$_{PP}$ d'argent...]]]]

Given its paucal meaning, *point*, like *aucun, rien* and *personne* as discussed above, was able to be reanalysed as merged in Num when the loss of the null indefinite D meant that referential Nouns were no longer legitimate in determinerless DPs. (Kayne 1994:105f. treats the Modern French counterparts of these *de*-phrases as containing an IP complement to *de*, see also Kayne 1975:123f.; adopting this approach would not affect the analysis being proposed here.)

So far, the development of *point* is parallel to that of *aucun, rien* and *personne* as discussed above. However, there is a crucial semantic difference between *point* and the other elements which were reanalysed from N to Num: *point* lacks the descriptive content susceptible to being reinterpreted as the restriction on a negative quantifier. This should be seen alongside the syntactic fact that *point* was able to separate from the following *de*-phrase, as in (42):

(42) De contredit n'i avra **point**
of opposition not-there will-have bit
'There will not be a bit of opposition.' (*P.*, 494 and 3946; Foulet 1990:265)

It is clear from examples like (42) that the fronted constituent can satisfy the V2 constraint operative in OF. However, whether the fronted constituent here is a PP or a remnant NP or DP, we are not in a position to say. The important point for our purposes is that the syntactic separability of *point* from the *de*-phrase combines with *point*'s lack of semantic content beyond 'pure' negation to create the circumstances for the reanalysis of *point* as a clausal negator, and thus the reanalysis of the DP headed by the null article as negative. This is then the origin of the null negative Determiner.

Point thus underwent a reanalysis comparable to that which the other clausal negators *pas* and *mie* underwent, which we will look at again in the next section. As Foulet (1990:269) points out, once expressions like *il n'y a pas d'argent* 'There is no money' arise, the development of the negative *de*-phrase is complete, since these are etymologically absurd ('there is not a step of money', since negative *pas* derives from a Noun meaning 'step', see 4.2.3).

So we see how the development of the construction in (36) is connected to the development of clausal negator *point*. The result of this development, combined with the loss of the null non-specific indefinite, is that null Ds are always inherently negative. Now, since *rien* and *personne* are the only Nouns able to appear with a null Determiner, they become inherently negative. Thus they changed from being of type (23c) to type (23b). Regarding the adverbial elements *jamais, plus*, etc. discussed above, we can also postulate a Num position for them which changed in the same way and for the same reason. Therefore French n-words have diachronically developed a dependency with the (M, T) chain via the inherently negative null D. The crucial cause for these changes was the change in the status of the null D in French from (non-specific) indefinite to negative.

In this section and the previous one we have sketched a general account of negation, and attempted to describe how a number of indefinite nouns in OF became n-words in Modern French. The account relies on the idea that negative *Agree* developed as a consequence of the change in the status of null D. In the last analysis, then, as Déprez (2000) has observed, fully understanding the development of French negation involves understanding the development of the D system, that is, the general development of a requirement that D be phonologically realized. This appears to have been largely a question of an extension in the distribution of the indefinite article *un(e)* from specific to non-specific contexts, with only negative determiners remaining null, along with the development of the 'partitive article' *du/de la/des*. We have also observed the striking similarities between the development of *personne* and *rien* from Nouns to n-words and the development of English modals (loss of argument structure/descriptive content, loss of movement, loss of phi-features). It should also be noted that the development of *point* as a clausal negator involved a further loss of movement and of content, as it was reanalysed as no longer having a *de*-phrase complement.

4.2.3 The negative cycle

Another very well-known case of grammaticalization plays a role in Jespersen's (1917) 'negative cycle'. In essence, Jespersen observed that languages tend to pass from a *neg V* negation pattern (i.e. where a clitic-like element precedes the finite verb) first to a *neg V NEG* pattern (where an adverb or a noun 'strengthens' the clitic negator) and then to a *V NEG* pattern (where the preverbal negator is simply lost). The stages are illustrated for English and French here:

(43) *Stage One*:

a. OE: ic **ne** secge
I neg say

b. OF: jeo **ne** dis
I neg say

(44) *Stage Two*:
a. ME: I **ne** seye **not**
I neg say NEG
b. Standard French: je **ne** dis **pas**
I neg says NEG

(45) *Stage Three*:
a. ENE: I say **not**
b. Colloquial French: je dis **pas**

As the above examples show, in Stage One negation Neg* is realized high in the clause, either in the T- or in the C system (see van Kemenade 2000 for English). The transition from Stage One to Stage Two involves grammaticalization, in that a second negative element is introduced. Moreover, in a Stage-Two system, there must be an Agree relation between the lower and the higher negation, such that the clause is interpreted as containing a single negation, along the lines of the analysis given in section 4.2.1.

The development from Stage One to Stage Two involves the development of a clausal negator. There seem to be three principal sources for clausal negators:

(46) a. minimizers:
mie/mica/mia (‘crumb’) in French and Italian dialects
point (‘point’) in literary French
pas (‘step’) in French
b. negative quantifiers/pronouns:
Modern Greek *dhen* < Classical Greek *oudhén* (neut. ‘no one/nothing’)
English *not* < Old English *nan wiht* ‘no creature’
Latin *non* < *ne* + *oenum* ‘not one’
c. generic nouns, used as indefinites:
Moroccan Arabic *shi* < Classical Arabic *shahy?* ‘thing’

In all these cases a DP turns into a head, and Agrees with Neg*. The second aspect of the change, namely the development of an *Agree* relation with Neg*, is exactly the change we discussed in the previous section in relation to *rien, personne, aucun, point* and other elements in French. However, the development of Stage Two negation from minimizers clearly involves more: the original Noun loses its D properties entirely and is reanalysed as a clausal element, Neg. In the case of the history of French, in our discussion of *point* in the previous section we observed that this was due to the combination of a semantic factor, that is, the lexical meaning of the original noun as a minimizer meant that there was no semantic element which could be reanalysed as a restriction on a negative quantifier (unlike *rien* and *personne*), and a syntactic factor, that is, the ability of the following *de*-phrase to appear syntactically separated from *point*.

In the history of French, two other elements have developed into Stage Two negators: *mie* and *pas*.[19] *Mie* (etymologically 'crumb') existed alongside *pas* and *point* as an optional reinforcement of *ne* in OF, and grammaticalized with *pas* and *point* but dropped out of Standard French in the seventeenth century; the cognates *mica, miga, mia* are found in many Northern Italian dialects which have Stage Two or Stage Three negation (cf. Zanuttini 1997, Manzini & Savoia 1998). The development of *mie* is identical to that of *point*. Clearly this element was inherently a minimizer. It also appeared in partitive constructions in OF and could be syntactically separated from the partitive *de*-phrase:

(47) a. del roi **mie** ne conut
of-the king MIE neg knew-3sg
'he knew nothing of the king/he didn't know the king'
(Chrétien de Troyes, *Perceval* 892; Foulet 1990:263)

b. de son neveu n'i vit **mie**
of his nephew neg-there saw-3sg MIE
'he saw nothing of his nephew/he didn't see his nephew'
(Chrétien de Troyes, *Perceval* 9186; Foulet, p. 263)

We thus take the development of *mie* to be exactly like that of *point*.

The principal Stage Two negator of French, and the only element to undergo the transition to Stage Three of Jespersen's cycle, is *pas*. As is well known, this element derives from a Noun meaning 'step' (which still survives in Modern French). This element never appeared in partitive constructions, but must have originated as a minimizer associated with verbs of movement (on the semantic relation between minimizers and predicates see Hoeksema 2001). In other words, it originally functioned as a direct object in expressions like 'walk a step', etc. Foulet (1990:259–260) observes that in OF it very rarely appears with transitive verbs, but tends to appear with intransitives and 'be', where it may have been a kind of cognate object. Thus *pas* is arguably a case where a minimizer developed directly into a negator. In any case, it must have originated in a DP complement to the main verb, and we can then assume that it was reanalysed as Neg in the same basic way as *point* and *mie*. The single difference is that *pas* was never associated with a partitive phrase, but instead appeared often with intransitives, and so was amenable to reanalysis as a non-complement for this syntactic reason. The semantic reason for the reanalysis is the same as in the case of *point* and *mie*.

19. Foulet (1990:271–272) also gives two examples of *goutte* ('drop') as a reinforcer of *ne* in OF. This element was clearly also a minimizer.

The reanalysis of *pas, point* and *mie* is thus as follows (the *de*-phrase is only present with *point* and *mie*):[20]

(48) V [$_{DP}$ mie/pas/point ([$_{PP}$ de DP])] $>$
V [$_{Neg}$ mie/pas/point] [$_{VP}$ ([$_{DP}$ Ø del roi])]

Again we see a clear structural simplification, in that the former DP becomes a Neg-element, that is, an XP becomes a head. Where the verb is intransitive, the former object DP is eliminated; where the verb is transitive, the internal structure of the direct-object DP is simplified (the original partitive direct object contained a DP whose Noun had a PP complement). Note also that *pas, point* and *mie* all have lost phi-features: the first two were masculine and the last feminine, but the negators have no grammatical gender or number. In the case of *point* and *mie*, a change in the status of movement operations was also relevant. If examples like (42) and (47) where *point/mie* are separated from the *de*-phrase involve remnant movement, then movement of *point/mie* out of DP is lost, as shown in (49a). If these examples involve subextraction of the PP from DP, then the fronting operation can be reanalysed as fronting of the object DP; this, too, is arguably a simplification as the movement becomes more local, as shown in (49b):

(49) a. [$_{DP}$ t$_{mie}$ de son neveu] n'i vit **mie** t$_{DP}$
$>$ [$_{DP}$ Ø de son neveu] n'i vit **mie** t$_{DP}$
b. [$_{PP}$ de son neveu] n'i vit [$_{DP}$ **mie** t$_{PP}$]
$>$ [$_{DP}$ Ø de son neveu] n'i vit **mie** t$_{DP}$

This concludes our account of the analysis of the development of French negation. It is clear that a number of now-familiar mechanisms were at work: loss of movement, loss of phi-features and structural simplification.

Greek gives us a good example of the development of Stage Two negation from negative quantifiers or pronouns. The Modern Greek negator *dhen* originated out of the neuter negative quantifier *oudhén* ('nothing'). Classical Greek had the following series of negative quantifiers: *oudheis* (masculine), *oudemia* (feminine), *oudhen* (neuter), which were formed out of the negative morpheme *ou* (clausal negation), the particle *de* (but/and), and the indefinite/ numeral *heis, mia, hen* (one).[21] In this respect the morphological make-up

20. Finite verbs leave VP and move to a position above the lowest Neg-position throughout the history of French (see Pollock 1989, Roberts 1993a).

21. There was an additional series of negative quantifiers in CG, which had the negative morpheme *me:*, i.e. *me:dheis, me:demia, me:dhen*. The distribution of these two sets of quantifiers followed that of the two negators *ou* vs. *me:*. It's interesting to note that while *oudhen* was reanalysed to a clausal negator, *me:dhen* became a nominal, meaning 'zero'. In other words it 'degrammaticalized'.

of these items is very much like that of negative words in English (*nobody, nothing*), or the Italian n-words (*nessuno*, etc.). In CG the negative quantifiers mainly occurred without clausal negation, although in some cases the negator *ou(k)* could be present for emphatic purposes. This is illustrated with the following examples (Horrocks 1997:274–275) (see also Haspelmath 1997, Chapter 8 for a discussion of these facts and Joseph 2001b for Greek negation generally):

(50) a. *ouk* ara . . . gigno:sketai to:n eido:n *oudhen*. (Plato, *Parmenides*, 134b)
not then . . . is known-3sg of-the forms nothing
'Of the forms then nothing is known.'
b. *oudhen* auto:n atimaseis. (Plato, *Parmenides*, 130e)
nothing of-them will-undervalue-2sg
'You will undervalue nothing of them.'

The neuter form *oudhen* as a simple negative is already attested in the Koine, as in the following example (Horrocks 1997:125):

(51) hoti *oudhen* ekho:men marturo:n (P. Oxy.1683)
that nothing have-1pl witness
'. . . that we have no witness'.

It is not so clear that at this period *oudhen* had already grammaticalized as a clausal negator. Nevertheless, what is important is that it showed a rather different distribution from that of a negative quantifier (see Jannaris 1897:425ff., §1797–1800). Note that the direct object in this case is in the genitive (plural) and is interpreted as a partitive. In this respect it is quite similar to the French *de*-construction discussed above (cf. also the well-known cases of the genitive of negation in Slavic languages; see Pesetsky 1982 for an early discussion of the phenomenon).

According to Horrocks (1997) *oudhen* starts being used as a simple negative from the sixth century AD onwards in place of the negator *ou(k)* (although *ou* is attested in much later texts as well). During this period it also reduces to *dhen*, following the more general phonological process of aphaeresis (dropping of unstressed syllables). Note that in the reanalysis that took place the original negative morpheme *ou* is dropped, and the original indefinite (*hen* > *en*) remains as the new negative element, as shown in the following MG example:

(52) *Dhen* tha ertho.
not prt come-1sg
'I will not come.'

Recall from Chapter 3 (section 3.1) that Neg in MG is realized in the C system. If this is correct, then the reanalysis of *oudhen* > *dhen* not only involves changes within the DP but also movement of the quantifier and later merger high up in the clause structure. The early example in (51a) actually shows that *oudhen* has moved higher up in the clause, following the complementizer *oti*, and stranding the genitive NP/DP (the restrictor). Thus the availability of constructions of this kind formed the path for the reanalysis of *oudhen* as a clausal negator.

Let us start with the reanalysis within the DP. Given that *ou* is a negative morpheme, just like *no* in English, we can say that it lexicalised the D head. The particle *de*, being an additive particle (a scalar quantifier) can be analysed as the realization of Num, while the indefinite/numeral is in N. It seems reasonable to assume that once the particle and the numeral form a single element (a syllable), the *dhen* part is directly merged in Num as a single element. Upon the elimination of the unstressed syllable, *dhen* lexicalizes D, thus providing a new form for the negative feature. The reanalysis within the DP, then, is responsible for the new negative form *dhen*. However, the development of *dhen* cannot be seen independently of the position *oudhen* had at some stage of its development in the clause structure. As mentioned above, the presence of a negative D (*ou*) allowed for *oudhen* to act as a Probe (according to the typology in (23)), and therefore it could directly lexicalize Neg, by moving to SpecNegP. Once it takes up a clausal function (a sentential negator) in constructions like that in (51) (where it is separated from the partitive DP), we can assume that at a later stage it is directly merged in SpecNegP. The phonological reduction that took place yielding *dhen* gave rise to its reanalysis as a head and more precisely as the realization of Neg. This is a further instance of structural simplification: an XP becomes a head (Spec > head reanalysis). The relevant stages are illustrated in (53) below:

(53) a. [$_{DP}$ ou [$_{NumP}$ de [$_{NP}$ en]]] > [$_{DP}$ dhen [$_{NumP}$ [$_{NP}$]]]
b. [$_{NegP}$ [$_{DP}$ oudhen] Neg [$_{MP}$ M [. . . .]]] > [$_{NegP}$ dhen [$_{MP}$ M [. . .]]]

The changes in (53a) and (53b) to some extent go in parallel. The reanalysis in (53a) essentially involves the loss of a restriction of the original quantifier. The reanalysis in (53b) gave rise to structural simplification, creating a new lexical realization for Neg*. This is an instance of Move > Merge reanalysis along the lines described so far. While the negative quantifier *oudhen* was reanalysed as a clausal negator, the other quantifiers *oudheis, oudemia* (and those formed with *me*:) dropped out and were replaced by polarity items (PIs) (*kanenas, tipota*), following further changes in the pronominal system of Greek. We will discuss

this issue in section 4.3 below when we consider the development of wh-words in the history of Greek.

Finally, let us consider the third source for Stage-Two negators listed above: that of generic nouns used as indefinites. In Moroccan Arabic, the element *shi* (from Classical Arabic *shahy?* 'thing') functions as a *pas*-like second element of negation, as a non-specific indefinite, as a wh-formative and as part of the interrogative marker (Ouhalla 1997):

(54) a. ma qrat **shi** Nadia l-ktab
neg read neg Nadia the-book
'Nadia did not read the book.'
b. qrat Nadia **shi** ktab
read Nadia some book
'Nadia read some book (or other)'
c. **sh**-men bnt qrat **sh-**men ktab
which girl read which book
'which girl read which book?'
d. wa-**sh** qrat Nadia l-ktab?
Q read Nadia the book
'Has Nadia read the book?'

Clearly, the original generic Noun was reanalysed as an indefinite D (we will discuss the development of indefinites in detail in the next section), and the indefinite took on both wh- and negative functions (presumably the question-particle use derives from the wh-function, but we will not speculate about this here). As an indefinite in (b) and a wh-element in (c), *shi* has a restrictor. It also appears with a further morpheme which acts as a restrictor in simple wh-words:

(55) a. **sh**-kun 'who'
b. **sh**-nu 'what'

We can surmise that the negative use arose from the indefinite with a negative feature but without a restriction, exactly like French *pas, point* and *mie* as discussed above. So this is a further case of DP > Neg reanalysis.

The very final comment in our discussion of Jespersen's cycle concerns the transition from Stage Two to Stage Three. In this respect, we can follow Jespersen's analysis by simply saying that this was the loss of the 'high' Neg* for phonological reasons, namely the higher negation was unstressed and consequently dropped. This is then a purely phonologically driven change. We will briefly discuss the nature of cycles of grammaticalization in Chapter 5.

Having concluded our discussion of n-words and the development of negative markers out of indefinites, we next turn to the discussion of wh-words and

universals (sections 4.3 and 4.4), and we conclude this chapter with a discussion on agreement markers (clitics and affixes) in sections 4.5 and 4.6.

4.3 Wh-elements

In this section we will discuss the development of wh-words in Greek from indefinites. As mentioned in section 4.2.3, CG had a (double) series of negative quantifiers, which mainly occurred to the exclusion of clausal negation. It also had a series of indefinite pronouns, namely *tis* (masculine, feminine), *ti* (neuter), which functioned as an existential ('someone', 'something'), a wh-word ('who', 'what', 'which'), or a polarity item ('anyone'), as illustrated below:

(56) a. *Tí* an apekrino:?
what prt answer-2sg
'What would you answer?' (Pl. Prot. 311c)
b. . . . akouein proteron *tí* legousin.
listen-inf first what say-3pl
'. . . we should first listen to what they have to say' (Pl. La. 181d)

(57) a. *Tí* gar an *tis* kai poioi, o: So:krates?
what prt prt one and do-3sg, voc Socrates
'What could one do, Socrates?' (Pl. La. 184d)
b. Legein *ti* o: So:krates moi dokeis.
say-inf one voc Socrates me-dat seem-2sg
'You seem to me to be saying something, Socrates' (Pl. La. 199e)
c. . . .ei *tis* *ti* erei.
if thing anything say-3sg
'[let us not mind] if anyone says anything' (Pl. La. 201b)

In the examples in (56a, b) the element *tí* is interpreted as a wh-element, basically 'what', in matrix and embedded contexts respectively. In (57a) clause-initial *tí* is interpreted as a wh-element, while *tis* following the two particles has the interpretation of 'anyone'. In (57b) *ti* is interpreted as 'something' (an existential), while in (57c) both *tis* and *ti* are interpreted as 'anyone' and 'anything' respectively.

Notice that in examples (56) and (57), when the indefinite is used as a wh-element, it is orthographically marked with an acute, indicating that it received stress, while in all other uses it was unstressed and cliticised onto the preceding word. Although the orthographical convention is indicative of the distribution of the two items, it cannot be used as the only piece of evidence for their different properties, as the original texts were all written in capital letters and had no stress indications. So there must be a syntactic way to disambiguate

all the relevant readings. Indeed when *tis/ti* is an interrogative, it occurs in clause-initial position preceding particles, etc., while in all other cases it occurs lower down in the clause structure, following complementizers, particles, or even the verb. The example in (57a) is quite indicative of this distribution: the clause initial *tis* is an interrogative, while *ti* which follows the particles *gar* and *an* is interpreted as 'anything'. Similarly, in (57c) both elements follow the conditional complementizer *ei* and can only be interpreted as 'anyone' and 'anything' respectively. As the data in (57) show, the interpretation of *tis/ti* depends on the presence or absence of a relevant operator in the clause structure (and on this basis we expect that *tis/ti* in the scope of negation will be similar to a negative PI). On the other hand, the presence of a polarity-licensing element (a downward-entailing operator, or a non-veridical one in Giannakidou's (1998, 2000) terms) turns *tis/ti* into a PI ('anyone', 'anything'). In other words, *ti* enters an *Agree* relation with the relevant operator (just like *any*). The same holds with a question operator, provided the indefinite is not in a clause-initial position. The absence of a relevant operator simply gives rise to an existential reading ('something'), as in (57b); in this case we could say that it directly *Agrees* with the existential operator in M (cf. section 4.2.1).[22] The distribution of the indefinite *tis/ti*, then, is quite straightforward (see Roussou 1998 for a further discussion of the properties of wh-interrogatives in CG).

The complete paradigm of indefinites in CG is given below (for present purposes we will focus only on *tis/ti* and *poíos*; we leave aside the adverbial indefinites):

(58) *CG indefinites*

tí, tís/ti, tis	(who/what, someone/something, anyone/anything)
pósos	(how much, of some/any quantity)
poíos	(of what kind, of some/any kind)
pou	(where, somewhere/anywhere)
po:s	(how, somehow/anyhow)
póte	(when, sometime, anytime)

The situation is quite different in MG: the CG indefinites in (58) have been reanalysed as wh-words. It is worth mentioning that the animate indefinite *tis* dropped out and has been replaced by *poíos* > *pjós* (through synizesis and stress shift). The 'restriction of function' of the paradigm in (58) goes along with the development of a distinct series of existentials, as well as PIs in the history of Greek, illustrated in (59) from MG:

22. This option is unavailable to *any*, even in its free-choice manifestation. See note 30.

(59)

Existentials	*PIs*
káti	típote (> tipota)
kápjos	kanénas
kápou	pouthená
kápote	(poté)

As is clear from the first column of (59), the existentials are formed out of the interrogative (former indefinite) and the particle *ka(n)* (*kan* < *kai an* = and even) (cf. Horrocks 1997, 11.7.8), originally an intensifier in CG which turned into a negative PI in MG, as (60a) and (60b) respectively show:

(60) a. epei kan su, [. . .] beltio:n an genoio
because even you better prt become-2sg
'Because even you, [if . . .], would become better.' (Pl. Prt. 318b)
b. *(Dhen) efije *kan*.
not left-3sg even
'He didn't even leave.'

The particle *kan* in MG can be used both as a free and a bound morpheme. Going back to (59) we notice that the PI *kanenas* is also formed out of the particle *kan* with the numerical *enas*. The derivation of the other PIs is based on different sources: for example *tipote* is made up of *ti* and the element *poté* (ever) (see section 4.4 on 'ever'-type particles). For the rest of the elements see Horrocks (1997:224).

Another related change involves the development of the indefinite article *enas, mia, ena*, out of the numerical *heis, mia, en*, which (progressively) replaced the indefinite *tis/ti* in its function as a noun modifier (cf. the replacement of the null indefinite by *un(e)* in French, discussed in the previous section); in essence the function of the indefinite *tis* inside the DP was considerably restricted. Examples of this change are already found in the New Testament:

(61) a. ido:n suke:n **mian**
seeing fig-tree one
'Seeing a fig-tree . . .' (Matt. 21, 19; Jannaris 1897:170, §623)
b. e:kousa **henos** aetou
heard-1sg a-gen eagle
'I heard of some eagle' (Rev., 8, 13; Blass *et al*. 1961:129, §247)

In CG (61a) and (61b) would have been *suké:n tiná* and *aetoú tinós* respectively. According to Jannaris (1897:169ff.) this change was triggered by the need to 'regularize' the indefinite: to be more precise *tis* was used for both the masculine and the feminine, while the numeral had a distinct form for each gender (for a discussion see Chila-Markopoulou 2000). The development of a distinct class

of PIs cannot be seen independently of the changes in the former indefinite series as well as the reanalysis of the negative quantifier *oudhen* as a clausal negator (cf. the discussion in section 4.2.3).

On the basis of these changes in the history of Greek, we would like to argue that the development of a distinct series of wh-words out of the indefinite ones is an instance of grammaticalization. More precisely, the reanalysis is in some respects quite similar to that attested with n-words in the history of French, in the sense that a former element which lacked quantificational force of its own acquired one from another element in the clause structure (under *Agree*). As argued in detail in sections 4.2.1–4.2.2, this reanalysis was due to the internal changes inside the DP, plus the development of an *Agree* relation with a negative morpheme in the clause structure (Neg, D). So we expect that the indefinite > interrogative reanalysis in Greek was also accompanied by changes in the structure of the DP, as well as the formation of an *Agree* relation with a designated position in the clause structure.

Given that the interrogative interpretation arose when the indefinite occurred in clause-initial position, we take this position to be, as is standardly assumed, in the C system. Moreover, if we follow the orthographical convention, which clearly indicates that the indefinite as an interrogative was stressed, that is, emphatic, then we can go a step further and identify this position as Focus. Thus interrogative *tís/tí* was a focussed existential. At least with respect to MG, it has been argued that wh-elements occupy SpecFocP (Agouraki 1990, Tsimpli 1990, 1995); in other words, we have *Agree* (Foc, D). We then see that the actual position targeted by wh-movement in both CG and MG (and presumably the intermediate stages) has not changed. What has changed, though, is the internal structure of the indefinite DP, which in connection with the Foc position gave rise to the reanalysis of the indefinite as a wh-word.

Recall that the indefinite *tis/ti* could take a number of readings depending on the element it was associated with: *Agree* with a non-veridical operator triggered the ‘any-x’ interpretation, while the absence of such a relation (i.e. of an operator essentially) triggered the ‘some-x’ interpretation. The ‘wh-x’ interpretation, on the other hand, was more complex as it involved movement of the indefinite to FocP. In all cases then the interpretation of the indefinite came from another element in the clause structure. The obvious question is why this was possible. In our discussion of n-words in section 4.2.1 we argued that in order for an *Agree* relation to be identified (valued) it must receive a PF realization (cf. (15)). In the case under consideration here, this realization/identification cannot come from the DP itself, but from the element it *Agrees* with. On this basis, we can rather safely assume that this is due to the fact that D is not realized. In other words,

the indefinite *tis/ti* has a null D, whose value is fixed through the formation of an *Agree* relation. The availability of a null D is consistent with Longobardi's (1994b) analysis, according to which an unrealized D yields an existential interpretation (as is typical of indefinites). If D is null, then the indefinite must have occurred in a lower functional head, namely Num (a position which can be associated with certain quantificational elements, as already argued in the previous sections). The relevant structure is given in (62):

(62) [(Op) . . . . $[_{DP}$ D $[_{NumP}$ *ti* $[_{NP}$ N]]]]

The *Op* in (62) indicates the presence (or absence) of some operator in the clause structure which assigns the interpretation to the null D, and therefore the indefinite.

The question is what changed in the structure of the DP, giving rise to the wh-word reanalysis. Given the immediately preceding discussion, the change has to be associated with D: more precisely, once D receives a realization, its interpretation can be fixed inside the DP (at least partly) and therefore it does not need to form an *Agree* relation with a higher DP-external element. The reanalysis is then described as follows: Num > D is reanalysed as merger in D, presumably with an intermediate stage of Num-to-D movement (which we have to stipulate at this point). Even if we stipulate the stage of movement, the crucial point that remains is that we have an upwards reanalysis, yielding D* in the relevant constructions. The reanalysed structure is given in (63):

(63) $[_{DP}$ $D_{ø}$ $[_{NumP}$ *ti* $[_{NP}$ N]]] > $[_{DP}$ *ti* $[_{NumP}$ Num $[_{NP}$ N]]]

The reanalysed structure had the effect of eliminating the 'some-x' and 'any-x' uses of *ti*, because these interpretations required a null D and *Agree* with a designated operator. However, the situation was different for wh-*ti* which formed an *Agree* relation with Foc via movement of the whole DP containing *ti* to SpecFoc. In other words, the DP-internal change did not affect the wh-interpretation, given that in this case what was crucial was the presence of the 'indefinite' in SpecFocP, but the reanalysis in (63) did give rise to a restricted distribution of the former indefinite. It eliminated the other readings, leaving the interrogative interpretation as the only possible one. This was in part due to independent changes involving D, which we now describe.

Merger of the indefinite pronoun in D cannot be seen independently of the changes that affected the realization of the D position in the history of Greek. In MG the definite article is obligatory with proper names (cf. Roussou & Tsimpli 1994) and generic subjects. A null D is possible only when the DP occurs in an object position, provided it does not have a generic interpretation. In other

words, to some extent Greek has developed a system very similar (but not identical) to that of French (see also Vergnaud & Zubizarreta 1992 on expletive D in French). In CG, on the other hand, the definite article was a demonstrative element,[23] and was not used with proper names, for example, unless the DP it introduces was already mentioned in the discourse, in which case it was usually followed by the particle *de*:

(64) a. *(O) Sokratis   MG
         the   Socrates
       b. o   de   Socrate:s   CG
         the   prt   Socrates

Example (64b) has the interpretation 'as for Socrates' or 'Socrates, who was mentioned before'. The equivalent of MG (64a) has no article (cf. also Blass *et al*. 1961:131ff., §§249–276; Jannaris 1897, §§1195–1241, Manolesson 2000 for an account of the situation in New Testament Greek, and the sporadic uses of the definite article, as an article, and not a demonstrative). Merger of the new interrogative in D simply provided a new exponent for the wh-feature (we take 'wh' to be a focussed existential).

Consider next the development of the existential quantifiers, the *ka*-series. As already mentioned these elements consist of the indefinite/interrogative plus the particle *kan* ('even'). In other words, the combination of *kan* with the indefinites *ti* and *pjoios* gave rise to the interpretation 'even one person/thing' and therefore 'someone/something'. If the source for this formation was the indefinite, that is, prior to its reanalysis as a wh-word, then we would expect the *ka*-elements to have the structure in (65a). If, on the other hand, the source was the reanalysed indefinite as an interrogative, then we will have to assume that the morpheme *ka* occurs in an even higher position (X), yielding the structure in (65b):

(65) a. [$_{DP}$ *ka* [$_{NumP}$ *pjoios* [$_{NP}$ N]]]
       b. [$_{XP}$ *ka* [$_{DP}$ *pjoios* [$_{NumP}$ Num [$_{NP}$ N]]]]

On the assumption that the development of new existentials was partially triggered by the reanalysis of the indefinites as wh-words, it seems natural to assume that the *ka*-forms have the structure in (65b). What remains to be answered then is the nature of the XP projection above DP. Recall that *kan* is an intensifier ('and even') so it could be taken as a quantificational element. If this is correct, then we can identify X with Q and essentially postulate a QP above the DP (see

23. In fact the definite article of MG has its origin in the demonstrative *ho, he:, to* > *o, i, to* (for a discussion see Jannaris 1897, §§236, 558). This is then an instance of demonstrative > determiner reanalysis of the type discussed in section 4.1.

Cardinaletti & Giusti 2002).[24] We will come back to this structure in section 4.4 below where we discuss the development of universal quantifiers.

As the above discussion shows, MG interrogatives have an indefinite pronoun as their source.[25] We take this reanalysis to be an instance of grammaticalization along the lines of the other changes discussed so far. The crucial point in our proposal is that the indefinite was reanalysed as a D head (from Num). This involves merger at a higher functional head with the nominal structure. The *Agree* relation with a Focus position in the C system further contributed to this reanalysis. As a result of this change a new series of existentials developed, taking the new interrogative as its source. In this case as well we have an instance of structural simplification (loss of movement, followed by Merge). Notice that if the definite article in MG also developed out of the demonstrative, as mentioned above, then on the basis of our discussion in section 4.1 it was reanalysed from a lower functional head (Dem) to a higher one, namely D. We then see that the restructuring of the D system in the history of Greek involved different instances of grammaticalization along the same path (i.e. upwards in the nominal structure).

4.4 Universal quantifiers

In this section, we briefly review the diachronic sources for the universal quantifiers cross-linguistically, as identified by Brugmann (1893–1894) and

24. Cardinaletti and Giusti (2002) do not take QP to correspond to a functional projection. At the same time, Cardinaletti and Starke (1999) argue that there is a functional layer above DP, which has the properties of C (cf. also Manzini & Savoia forthcoming). For present purposes we will call this position QP, but we will analyse it as a functional projection, encoding operator properties.
25. According to Haspelmath (1995, 7.3) the interrogative is the source for the indefinite. More precisely, it was the interrogative (*tís, tí*), which formed the basis for the indefinite. Haspelmath suggests that this kind of pattern seems to correlate with the availability of SOV orders: languages that have interrogative-based indefinites appear to have SOV orders as well (section 9.2, although he later argues against this idea). It is not so clear, though, why such a correlation needs to hold. To some extent it's true that SOV languages, like Chinese for example, have wh-in-situ and in Haspelmath's terms interrogative-based indefinites (cf. Cheng 1991 for a typological discussion, and Bach 1971 for the original typological observation). Kayne (1994:54) suggests accounting for the correlation between SOV and wh-in-situ in terms of the idea that IP fronting and wh-movement compete for the same landing site (it's not obvious how to state this in terms of a 'split-C' system of the type assumed here – see Chapter 3). We could then surmise that wh-in-situ and indefinite-interrogatives correlate, and this would indirectly relate indefinite-interrogatives to SOV order. However, both implicational relations (SOV and wh-in-situ; wh-in-situ and indefinite-interrogatives) must be one-way statements; there are SVO wh-in-situ languages (e.g. Thai and other South-East Asian languages, as pointed out by Haspelmath), and CG has indefinite-interrogatives but lacks wh-in-situ. Following Haspelmath's lead, we leave these questions open.

Haspelmath (1995). In each case, we will observe again the development of new functional material, this time exponents of D and Q, and show how the familiar mechanisms of structural simplification are at work. An important aspect of these cases is the semantic development; these are relatively clear cases of loss of non-logical content.

Haspelmath identifies as the main source of 'all', at least in the Indo-European languages (and cf. Brugmann 1893–1894:10–28), an adjective meaning approximately 'whole'. This change can be seen particularly clearly in the history of Greek (Haspelmath, following Brugmann, also makes a plausible case for the same development in Romance, Germanic and Indic). In Classical Greek, *hólos* meant 'whole', while Modern Greek *ólos* means 'all' (the word for 'whole' in MG is *olokliros*). The following pair of examples illustrates the difference:

(66) a. holous oikous
whole houses (i.e. families)
b. ola ta spitja
all the houses

Haspelmath (1995:367) characterizes the meaning of 'whole' as follows: 'being in good shape, . . . not being damaged, . . . not lacking in any of the integral parts, . . . functioning properly'. Now, where 'whole' modifies a collective Noun (cf. 'the whole family/team/government', etc.), the property of 'not lacking in any of the integral parts' can be taken to mean that all members of the set denoted by the collective Noun are relevant to the interpretation of the sentence in which the DP containing the Noun appears. So 'the whole family is here' is semantically very close to 'all the family/every member of the family is here', particularly in the crucial sense that the absence of one member of the family makes the sentence false. Slightly more formally, we can observe a similarity between the truth conditions of the following (taking the inherent meaning of 'whole' to be as characterized by Haspelmath, and where the constant *f* denotes 'the family' and the set F the set of family members):

(67) a. Here(f) & whole(f) 'the whole family is here'
b. $\forall$x: x $\in$ F [here (x)] 'all members of the family are here'

Here we see the ambiguity noted by Haspelmath as to whether 'whole' relates to members of the set or to the set itself. Where 'whole' is taken as referring to members of the set, then it entails the meaning of a universal quantifier (its meaning may be somewhat richer than this along the lines quoted above, before being fully grammaticalized). In becoming a universal quantifier, 'whole' passes from denoting a property of a set (the denotation of the collective Noun) to

denoting a relation between members of that set and another set (the predicate), that is, the subset relation. In other words, in denoting a relation between sets, it becomes a (generalized) quantifier.

It seems that, once it applies to collectives and mass nouns in this way, the quantifier can be extended to use with plurals and then, in the sense of ‘every’, with singulars. Haspelmath illustrates this with the development of Latin *totus*, which meant ‘whole’, to general Romance *tous/tutti/todos* (pl), which means ‘all’, and the occurrence of singular *todo* with a singular Noun in Portuguese, meaning ‘every’.

The syntactic corollary of this semantic change is a reanalysis of an earlier AP as a Q. Following Cardinaletti and Giusti’s (2002) proposal that there is Q position which takes the DP as its complement (cf. section 4.3), we thus have the following structural reanalysis:[26]

(68) $[_{QP}\ [_{DP} \ldots [_{AP}\ \text{holous}]\ [_{NP}\ \text{oikous}]]] > [_{QP}\ [_{Q}\ \text{ola}]\ [_{DP}\ [_{D}\ \text{ta}]\ [_{NP}\ \text{spitja}]]]$

This reanalysis involves simplification of structure, in that an AP is reduced to a Q (in the sense that it is merged in Q).

The semantic change undergone by ‘whole’ becoming ‘all’ is highly significant, we believe. It is clear, as Haspelmath points out, that the change is in a certain intuitive sense from a relatively concrete meaning to a relatively abstract meaning, and, as we have just noted, that it involved an ambiguity at some point regarding whether the denotation related to sets or to members of sets. But what is most important is that the sole aspect of the original meaning of ‘whole’ that is retained is the entailment of holding of all members of a set, that is, the defining property of a universal quantifier. The other aspects of the meaning of ‘whole’ listed above (being in good shape, not being damaged, etc.) are properties whose semantic evaluation depends on empirical facts. The denotation of a universal quantifier, on the other hand, is purely a relation between sets (the subset relation). This latter kind of denotation has been referred to as ‘permutation invariant’ (cf. Mostowski 1957, von Fintel 1995, Sher 1996) in the sense that, as long as the cardinality of the sets is held constant, the truth conditions of the sentence are unaffected if members of the sets related by the quantifier are arbitrarily switched around. For evaluating the other aspects of

26. It may be tempting to place MG *ola* in SpecDP, but demonstratives can intervene, showing that it has to appear in a higher position (here the demonstrative has raised from a lower position in DP; see Panagiotidis 2002):

i. ola afta ta spitja
all those the houses
‘all those houses’

the meaning of 'wholeness', on the other hand, empirical (as opposed to purely numerical) properties of members of the set need to be known about. We will return to this very important point in Chapter 5.

Regarding the origin of 'every', Haspelmath notes that, in addition to originating from 'all' as described above, a common source is free-choice indefinites (like English *any* in *Anyone can play guitar*), which in turn commonly derive from free relatives of the general type 'what(ever) you want/it may be' or a wh-expression combined with a conjunction. Haspelmath calls these the 'wh + indefiniteness marker' constructions, and points out that there are four main types: *wh+ever, wh+and, wh+want* and *wh+be*. Examples of 'every' deriving from wh + indefiniteness marker are as follows (see Haspelmath's (1995) (10), p. 370):

(69) a. Chinese: *shéi ye* ('everyone') < *shéi* ('who') + *ye* 'also'
b. Latin: *quisque* ('every') < *quis* ('who/which') + *que* 'and'
c. Gothic: *hwarjizuh* ('every') < *hwarjis* ('which') + *-uh* 'and'

Examples of free-choice indefinites of the same general form are (Haspelmath's (1995) (11), p. 371):

(70) a. Latin: *quivis* < *qui* ('who') + *vis* 'you want'
b. Hungarian: *akármelyik* < *melyik* ('which') + *akár* ('or')
c. Basque: *zein-nahi* < *zein* ('which') + *nahi* ('want')

Haspelmath also points out that a number of West Germanic expressions have a similar etymology, although this is somewhat obscured by later sound changes and other developments. The Proto-Germanic particle **ajw* ('ever') and **hwalik* ('which') formed a compound element which gave Old English *ælc*, Dutch *elk* and Modern English *each*, while *every* derives from a further compounding of *ever* with *each*.

Let us take the first stage first: the development from free relatives to free-choice indefinites. Kayne (1994:154) proposes a structure like the following for free relatives in the context of his raising analysis of relative clauses:[27]

(71) a. We'll take whichever seat you offer us.
b. [$_{DP}$ [$_{D}$ which [$_{D}$ ever]] [$_{CP}$ [$_{DP}$ t$_{which}$ seat] C [$_{IP}$ you offer us t$_{DP}$]]]

Here, *which seat* raises from the IP-internal argument position to SpecCP, and then *which* undergoes D-to-D movement to adjoin to *ever*. Kayne treats *ever* as a 'kind of determiner', which fits well with Haspelmath's characterization of it as

27. Cf. Borsley (1997) for a critique of Kayne's approach, Bianchi (1999) for a general analysis of relative clauses of the Kaynian type, and Bianchi (2000) for a response to Borsley.

an indefinite marker. Interestingly, Larson (1987:257) treats *ever* as a universal, or, more precisely a ‘sortally-indeterminate’ specifier, which combines with the wh-element to form a ‘sortally-determinate’ specifier. This is attractive, as very often the formative in this position is the conjunction ‘and’ (see (69)). The logical connection between universal quantification and conjunction appears to have a reflection in structures of this type if this analysis is correct.

We could in fact extend Larson’s idea and treat the structure in (71b) as very close to the standard tripartite structure for generalized quantifiers: *ever* is the quantifier, *which seat* is the restriction and IP the nuclear scope. The two movement operations, wh-movement inside CP and D-to-D movement of *which*, create the correct variable-binding relations. Hence (71b) maps rather transparently onto (72):[28]

(72) $[_{DP}$ $[_{D}$ which $[_{D}$ ever]] $[_{CP}$ $[_{DP}$ t_{which} seat] C $[_{IP}$ you offer us t_{DP}]]]
D = Q x NP(x) IP (x)

On this view, *which* has no quantificational force independently of *ever*; it merely establishes the variable-binding relation. This would capture the relation between free relatives and universals.

The free-choice determiners in (70) derive from free relatives where the content of the IP is ‘you want’ (see (70a, c)) or ‘it may be’ (see Haspelmath’s (1995:370) discussion of Rumanian *fiecare* ‘every’, where *fie* is etymologically the subjunctive of ‘be’). The structural reanalysis is as follows:[29]

(73) $[_{DP}$ $[_{D}$ what $[_{D}$ ever]] $[_{CP}$ $[_{DP}$ t_{what}] C $[_{IP}$ (you) want/(it) may be t_{DP}]]] >
$[_{DP}$ $[_{D}$ what (ever) –want/be] NP]

This rather spectacular reanalysis comes about as a result of three superficial factors: (i) phonological reduction of the ‘ever’-formative; (ii) the fact that the DP headed by *what* contains no NP; (iii) the fact that most of the languages where this kind of change has taken place are null-subject languages, and so no overt subject would be expressed in IP, leaving IP containing just the formative ‘want’ or ‘be’. These formatives often survive in free-choice indefinites and universals, cf. the Rumanian *fiecare* mentioned above, and forms such as Italian *qualsiasi* ‘whatever’, which contains the subjunctive of ‘be’ in *sia*, and Portuguese/Spanish *qualquer*/*cualquier*, which contain the root of *querer* ‘want’. It goes without saying that the reanalysis in (73) simplifies structure

28. We could follow Cardinaletti & Giusti (2002) and treat *ever* as Q. That would not make a substantial difference to the proposals here. We return to the Q vs. D distinction below.

29. It may be that the diachronic residue of IP occupies a head position in the DP lower than D after the reanalysis.

and eliminates movement dependencies (as well as depriving the verbs in IP of phi-features).

The general analysis of free-choice determiners remains the object of some debate. One long-standing line of analysis, going back to Quine (1960) and Carlson (1981) (see the detailed list of references in Horn 2000:160), treats such elements, exemplified by *anyone* in (74) as universals:

(74) You can marry anyone you want to.

Another line of reasoning, notably featuring Haspelmath (1997), Horn (2000) and Giannakidou (2001) treats them as indefinites, either involving existential quantification or not. What is clear is that such elements are always non-specific and never presuppose that there exists a referent for the quantified DP. One tempting line of analysis is to treat free-choice elements as indefinites lacking in their own quantificational force; in this respect they are similar to polarity *any* briefly discussed in 4.2.1 (cf. also the discussion of Moroccan Arabic *shi* in 4.2 and CG *tis* in 4.3). We can consider in fact that these elements must *Agree* (as defined in 4.2.1) with an existential or generic operator (it is unclear why free-choice elements should single out just these elements, but the similarity with indefinites and bare plurals is obvious). We can suppose that such operators confer the required interpretative content on free-choice elements, which are otherwise not able to be interpreted (outside polarity contexts). Here are the contexts identified as typical of free-choice indefinites by Haspelmath (1997:49f.):[30]

(75)
a. *Anyone lived in a pretty town. – no Agreeing feature
b. Anyone can play guitar. – 'existential' modal
c. Any doctor will tell you. – generic
d. Ask any doctor. – 'permissive' imperative
e. I would give anything for that. – hypothetical
f. I would have done anything. – counterfactual
g. Any size fits. – 'sufficient' conditions

Let us suppose, then, that free-choice indefinites, as illustrated by NE *any*, are D elements that lack inherent quantificational force, and are licensed under *Agree* with an appropriate (modal – see note 30) operator. We can relate these properties to the reduction of the quantificational structure in (72) that we saw

30. In 4.2.1 we introduced an existential temporal quantifier into the representation of simple-past sentences. This operator must be unable to license free-choice *any*, as the ungrammaticality of (75a) shows. It seems that the operator in question must be modal. On the other hand, CG *tis/ti* could be so licensed, as shown in section 4.3.

in (73). The original quantifier in (72) was the particle (illustrated with *ever*) introducing the relative CP; this element disappears – at least as an autonomous element – under the reanalysis in (73). Further, the original IP representing the nuclear scope of the quantifier has been entirely lost under the reanalysis in (73). The only element of the tripartite structure that remains is the restriction, carried by the morphological form of the wh-word (*what* as opposed to *who*, etc.). This corresponds exactly to what we said regarding free-choice *any*; this element lacks quantificational force and nuclear scope (in the DP), but does express a restriction. The requirement to *Agree* for a modal feature may be related to the residual presence in many free-choice elements cross-linguistically (see (70) above) of an element with originally modal content, such as Spanish/Portuguese *-quer*.

We now turn to the change from free-choice indefinites to universals. There are clear semantic differences between 'any'- and 'every'-type quantifiers/ determiners, as the following well-known examples illustrate:

(76) a. Take any apple.
b. Take every apple.

(77) a. You can marry anyone you want to.
b. You can marry everyone you want to.

The principal differences are: (i) that 'any' is not universal, while 'every' is; (ii) that 'any' does not presuppose the existence of a referent in the restriction of the quantifier, while 'every' does. These differences are clear from the contrasts in (76) and (77). Following Diesing's (1992) proposals regarding the presuppositional nature of quantifiers, we can take these two differences to indicate that 'any' is not a quantifier, while 'every' is. Thus the development of free-choice indefinites into universal quantifiers must involve the development of quantificational force. The obvious way to state this in terms of our assumptions is to treat the relevant quantifier as being reanalysed as a member of Q. This D-to-Q reanalysis is a further case of 'upward' grammaticalization.

In fact, we can make sense of the existence of the two sets of data in (69) and (70) more directly in terms of the reanalysis in (73) combined with Cardinaletti and Giusti's Q-over-D structure for quantified DPs (including the free relatives analysed in (71)). Suppose that, where wh-movement to D as in (71) and (72) is lost, the wh-element can be merged either in Q or in D. If it is merged in Q, a universal quantifier will result from the free relative structure; if it is merged in D, a free-choice indefinite will result. These possibilities are illustrated for the Latin forms *quisque* 'every' and *quivis* 'any' in (78):

(78) a. $[_{QP}$ $[_{Q}$ quis $[_{Q}$ que]] $[_{DP}$ D $[_{CP}$ $[_{DP}$ $t_{quis}]$ C $[_{IP} \ldots$ V $\ldots]]]] >$
$[_{QP}$ $[_{Q}$ quisque] DP]
b. $[_{DP}$ $[_{D}$ qui(s) $[_{D}$ ø]] $[_{CP}$ $[_{DP}$ $t_{quis}]$ C $[_{IP}$ vis $t_{DP}]]] >$
$[_{DP}$ $[_{D}$ quivis] NP]

An interesting case is Latin *quiquis* (Sihler 1995:401), which would have the same structure as *quivis* with the difference that the zero form in D in (78b) is lexically realized by *quis*, and that there is no realization of the original IP. A certain indeterminacy in the outcome of the loss of movement may thus account for the formal similarities and semantic differences in these forms.

Finally, Haspelmath (1995:376f.) discusses cases of universals derived from distributive prepositions. The principal example is the development of Greek *katá* ('through') into 'every'. The source of this change can be seen in examples like the following:

(79)
die:rkhonto	kata	tas	ko:mas	euaggelizomenoi	pantakhou
they-walked	through	the	villages	evangelizing	everywhere

'They went from village to village, preaching the gospel everywhere'
(Luke 9, 6; Haspelmath's (25), p. 377)

In combination with *héna* ('one-acc'), *kath' héna* meant 'one by one'. This was reinterpreted as a distributive universal quantifier, and gives MG *kathis* 'everyone'. The clear sign that *kat(h)* had lost its prepositional status is the development of nominative forms such as *katheis*; since the preposition *kata* governed the accusative, this could not be a PP. This change was on analogy with a similar change affecting another preposition, *aná* ('on'), and appears to have taken place in New Testament Greek (Blass *et al*. 1961, §§ 204, 248, 305). As Jannaris (1897, §664) points out, it was actually in analogy to *syn* ('with') that the prepositions *kata* and *ana* in their distributive reading were used as 'prefixes' to the nominative.

The reanalysis here is clearly PP > Q, a further instance of a maximal element becoming a head. It is interesting to note that the complement of P turned into the restriction on Q; this is an example of the original argument structure of the P being lost and replaced by the logical relation of restriction (the original modifiee of the PP becomes the nuclear scope of the quantifier). The semantic shift is evident from (79): 'through the villages' naturally implies 'every village'. Again, we can note that what is lost is the path reading of the preposition: a preposition like 'through' (which roughly corresponds to *kata*) denotes a continuous path through all the points on a line. What is lost under the grammaticalization is the non-logical aspect of the meaning: the 'path' notion, and what is retained is the purely numerical notion of universal quantification.

We see this as a significant illustration of the typical kind of semantic change which takes place under grammaticalization.

4.5 Clitic agreement: Northern Italian dialects

4.5.1 Introduction

In this section and the next we turn our attention to another very common kind of grammaticalization: the development of agreement markers. In this section we look at the well-known case of the Northern Italian dialects where pronouns have developed into clitic agreement markers, largely following important work on Veneto by Poletto (1993, 1995, 2000). In the next section, we look at the development of affixal agreement in Welsh, developing suggestions in Roberts and Shlonsky (1996). We will also briefly mention the possibility that some Indo-European verb endings may have a source as grammaticalized pronouns (cf. Szemerényi 1996:329–330 and the references given there). As we will see, the role of the conservative nature of the learner in accounting for these changes is central, in the sense that the relevant changes involve the loss of movement relations. In each case, a pronoun is reanalysed as an exponent of AgrS (some are also analysed as C elements – see below). Since we take pronouns to be Ds (following Postal 1966), this is a case of grammaticalization of one functional element as another. More precisely, this change parallels the ones producing Cs which we looked at in Chapter 3, in that the PF realization of certain features, in this case D features, is diachronically shifted from one head to another.

In order to discuss the development of subject clitics and subject agreement, it is necessary to be clear about the nature of the null-subject parameter (which we briefly introduced in 1.1). So far we have assumed a T head which can also carry features associated with the subject. In earlier versions of the theory, however, the positions associated with the nominal features of the subject and the object were individuated in the clause structure, taking the form of an AgrSP and an AgrOP position respectively (cf. Pollock 1989, Chomsky 1991). The standard assumption has been that AgrS is above T, while AgrO is below T (but see Ouhalla 1991 for an alternative view). Nevertheless objects can also be realized in a higher structural position when they take the form of a clitic. Similarly, subjects, in some languages at least, may appear in the low part of the clause structure (postverbal subjects of various types). In Chomsky (1995, 4.10; 2000, 2001) Agr projections are eliminated on the assumption that they carry features which are non-interpretable and therefore their presence cannot be justified as part of the clause structure, or more precisely at LF, given that these features must be eliminated in the course of the derivation. The assumption is that

the relevant sets of features become part of other functional heads: T for the subject, and v for the object (these heads also have nominative and accusative case features, respectively).

To the extent that Agr projections were postulated as purely checking positions with no further feature specification, then their elimination is desirable. At the same time, the set of D and phi-features associated with DPs are interpretable, and need to be represented not only as part of the DP but also as part of the clause structure, on the assumption that DPs become part of the sentence once they are associated with a predicate. In this respect then, we can take the Agr projections to correspond precisely to positions that represent the set of nominal features in the clause structure, thus establishing the predicate–argument relation. Viewed from this perspective we can maintain the existence of positions such as AgrS and AgrO, modifying them accordingly and bearing in mind that they receive a new meaning and as such they need to be appropriately labelled.

Restricting ourselves to the so-called AgrS for the time being, we expect that the usual parametric realization is open to this head as well. More precisely, AgrS may or may not receive a PF realization. If it does, then this can be derived in the usual two ways: by Merge or Move. The Merge option is satisfied when a dedicated inflectional morpheme is available in the grammar of a given language. Subject clitics are par excellence the elements that fulfil this requirement (with further clarifications, restrictions, etc. depending on person and number specifications for example). The Move option corresponds to the cases where the full DP appears in AgrS as the realization of the relevant features. Agreement affixes on V play an intermediate role, as they constitute the realization of the features associated with AgrS but are nevertheless realized on a lexical head (V). Recall that a similar account was proposed for the realization of irrealis mood features in languages like Greek for example: in Ancient Greek these features ('subjunctive') formed part of the verbal inflection (as distinct agreement affixes), while in MG they have become associated with a distinct head (M) higher up in the clause structure.

All four options mentioned above are manifested cross-linguistically. For example, the lack of any realization for AgrS is found in discourse pro-drop languages of the Chinese type (cf. Huang 1984, 1989), which do not have any morphemes that would realize the features of AgrS. The $AgrS^*_{Merge}$ option is typically associated with those languages that have a productive system of subject clitics, such as the various Northern Italian dialects (cf. Poletto 2000 for a recent overview). Finally, the realization of the $AgrS^*_{Move}$ option by means of a full DP is found in languages like English, which crucially lack a 'rich'

inflection associated with Agr (or perhaps we should say that they have a 'defective' inflectional system, thus differing from Chinese). Notice also that within the AgrS* option, different realizations may indeed co-occur as a function of different factors which involve the 'richness' of the verbal morphology, as well as that of the DP. For example, the availability of a subject clitic does not block the presence of an agreement affix on V. Similarly, the presence of the DP as a way of realizing AgrS* does not block agreement on V: this is the case of Modern French where the subject is always adjacent to the inflected V (cf. Pollock 1989). This pattern can be accommodated on the assumption that the agreement affix showing up on V in these cases plays a 'doubling' role, that is, it doubles the clitic/DP in AgrS. On the other hand, in languages like Standard Italian and Greek where the DP is not required (and there are no subject clitics) the agreement affix on V is the direct realization of AgrS, that is, it essentially 'resumes' the features of AgrS (cf. Tsimpli 1997). All four options are illustrated below:

(80) a. Lai-le (Chinese, Huang 1984:537)
came-asp
'I/you/he/etc. came.'
b. *Mary* is speaking
c. (La Maria) *la* parla. (Fiorentino, Brandi & Cordin 1989:113)
(the Mary) she speak-3sg
d. (i Maria) mila*i* (Greek)
(the Mary) speak -3sg

The interpretation of AgrS is derived on the basis of the feature specification of the lexical item that realises AgrS. In other words, the valuation of AgrS derives partly from its lexicalization and partly from discourse properties. For example, in languages like Chinese which lack agreement affixes and overt subjects are not obligatory either, that is, AgrS is not lexicalized, valuation is derived directly from the discourse. In languages like English, on the other hand, there is no separate morpheme to lexicalize AgrS. Instead it is the DP that plays this role, so the valuation of AgrS directly depends on the features of the DP. In languages like Greek, the agreement affix lexicalizes person and number, so valuation of AgrS is partly mediated through the grammatical morpheme. The same holds for those cases where a subject clitic is present. We then see that there is an interaction between the morphological realization of AgrS and the way its interpretation is derived (see Davis 2000, Roussou 2002b).

In the above discussion we have treated AgrS as a cover term for a number of features typically associated with DPs, such as D and the set of phi-features among others. The four parametric options mentioned above apply for any of

the above features of the split AgrS system, as we will see below. Our present aim is not to provide a detailed account of the projections that make up the agreement field, but simply to show how certain changes take place in connection to grammaticalization. Within this context of assumptions, grammaticalization of Agr (or of any of its features) would be an instance of Move > Merge reanalysis.

4.5.2 The development of agreement markers in Venetian

The empirical case we will consider in this section concerns the development of subject clitics, as realizations of AgrS, in the history of Venetian, as described and analysed by Poletto (1993, 1995). According to Poletto the following change took place between Renaissance (RVe) and seventeenth-century Veneto (SVe):

(81) $[_{AgrSP}\ DP_i\ [_{AgrS}\ V]\ [_{TP}\ [_{VP}\ t_i \ldots \quad > \quad [_{AgrSP}\ [_{AgrS}\ D + V] \ldots$

As the schema in (81) shows, a former DP pronoun was reanalysed as a head in AgrS, that is, the direct realization of AgrS.

There are three things to note regarding RVe. First, the first singular, first plural and second plural pronouns are identical (the *a/e* and *te/ti* alternation is dialectal, that is, the first is Paduan, the second Venetian), as shown in (82) (Poletto 1995:300):

(82)

	Singular	*Plural*
1st	***a/e***	***a/e***
2nd	*te/ti*	***a/e***
3rd	*el* (masc)	*i* (masc)
	la (fem)	*le* (fem)
Expletive	*l*	

Second, as Poletto (1995) shows, RVe had a partial null-subject system, much like that of Middle French (see Roberts (1993a, 2.2) and the references given there). Null subjects are found in embedded contexts with a specialized C (+wh or subjunctive), as in (83a). In matrix contexts, on the other hand, null subjects are found with first singular, and first and second plural. An example of a first plural verb is shown in (83b) (from Poletto 1995:304):

(83) a. Si volè scambiar tuto . . . (Calmo, p. 94)
If (you.pl) want to exchange everything

b. Havemo buo notitia che . . . (Calmo, p. 129)
(we) have had news that . . .

In other contexts, a DP was required in SpecAgrSP, much as in English (or, more precisely, French, since in the structure on the left of the arrow in (81) V movement has taken place). The verbal agreement system of RVe was

apparently rich enough to allow for null subjects (Roberts 1993a, 2.4.3). However, it appears that the licensing of null subjects depended, at least in part, on properties of C, as just mentioned. It is interesting to observe that this phenomenon may be diachronically correlated with the fact that Medieval Veneto was a null-subject V2 language in which null subjects were possible exactly in V2 contexts with a non-subject in initial position, that is, just where V moved to C and the subject remained in SpecAgrSP. In this respect, Medieval Veneto (and other Medieval Northern Italian dialects) were just like Old French (see Vanelli, Renzi & Benincà 1986, Adams 1987, Roberts 1993a, Vance 1988, 1997). By the periods discussed here (RVe and SVe) Veneto was no longer V2, but there are some 'remnant' cases of pro-drop.

Thus the pattern of pro-drop in RVe splits along the following two dimensions: (a) the properties of the pronoun, and (b) the properties of C. In (a) what is essentially dropped is the clitic, which does not show any morphological distinction for first singular vs. first plural vs. second plural; the same holds for the clitic *l* (the expletive), unless there is a postverbal DP subject present in which case it has to be present. All other clitics, that is, those that morphologically distinguish for person and number, cannot be dropped, but have to be present. This restriction does not hold in (b) where the context of pro-drop is determined by the features of C. Apparently not all Cs have the capacity to license a null subject, for example a -wh C does not trigger pro-drop. It is only a subjunctive C or *si* (if) or a wh-phrase that allow for this. At least the first two properties can be associated with an irrealis specification in C. If this is correct, then this case is quite reminiscent of the absence of an overt subject in Greek, Calabrian, and English when a modal marker such as *na, mu* and *to* respectively is present. So it may be possible to link the C-triggered 'pro-drop' of RVe to the phenomena we discussed in Chapter 3. We will not pursue this point further as it goes beyond the scope of our present discussion.

Third, according to Poletto (1995:301), the subject pronoun is in complementary distribution with a DP subject as shown in (84):

(84) a. *E* no so inganemo (Calmo, p. 66)
we not ourselves mistake

b. *Un' arma longa* fa sta indrio el so nemigo (Calmo, p. 96)
a long weapon makes stay behind the enemy

Given this complementarity, Poletto argues that the pronoun in RVe is a true argument DP in the sense that it moves from a VP-internal position to SpecAgrS. In other words, we could say that the pronoun system of RVe was very much like that of English: the pronoun is a full DP.

Between RVe and SVe the pronoun paradigm in (82) was reanalysed in two ways. On the one hand, the invariant first singular and first and second plural forms (*a/e*) were reanalysed as 'vocalic clitics', which we take to be elements in C (see the discussion below). The formally differentiated pronouns of the second singular, third singular and third plural were reanalysed as subject-agreement markers.[31] Thus, the reanalysis schematized in (81) only applies to the second and third singular and third plural pronouns. By the SVe period, then, these pronouns had been reanalysed as clitics in AgrS, written as D in (81). As such, they satisfied AgrS*. Notice that even after the reanalysis, agreement remained morphologically realized on V (i.e. an agreement affix remained present). In other words, the 2sg-3sg-3pl paradigm alone was not sufficient to value AgrS, assuming that 'rich agreement' means at most one syncretism (see note 32). Thus in this case it has to be the subject clitic and V together that value AgrS. This is presumably why V movement is retained after the change in (81). In this connection, Poletto (1995:307) comments: 'As in RVe subject clitics are not always distinguished for person and number, so RVe has no other choice than to maintain person and number features on Agreement, reinterpreting subject clitics as heads for the persons that are not fully specified by verbal morphology.' This gives us an important clue as to the mechanism of the change in (81): it seems that the levelling of the clitics caused the clitics to be reanalysed as agreement markers in this variety. This idea is consistent with an important difference between pronoun paradigms and agreement paradigms pointed out by Rizzi (1986b): agreement paradigms may contain gaps but pronoun paradigms do not.[32]

After the change, the combination of the clitic paradigm and the verbal agreement paradigm was able to value AgrS. Therefore, given the assumptions about the null-subject parameter sketched above, the DP is not required, hence not allowed, to move to SpecAgrS when the clitic is present. The change in (81) is a clear case of structural simplification in that the earlier DP movement operation is lost and is replaced by Merge of the clitic in AgrS in the

31. We are grateful to Cecilia Poletto for suggesting the idea of a 'split reanalysis' and for invaluable discussions and help with the data.
32. This discussion glosses over the notoriously difficult question of defining what constitutes 'rich' agreement. Naturally, the simplest account would be to require that all feature-combinations in AgrS require a separate morphological realization in order to be valued. However, this requirement is too strong; it seems that many null-subject languages tolerate a small amount of syncretism, generally at just one point in the paradigm (see Roberts 1993a:125–128 for discussion). In other words, what seems to be required (in classical null-subject languages) is that Num* and Pers* be realized distinctly for distinct feature combinations, up to one syncretism. See below for motivation for splitting AgrS into Pers and Num.

relevant persons. Notice that this is very similar to the reanalysis we argued for for *oudhen*, which was initially in the SpecNegP and later became the realization of Neg. We thus see that there is a rather clear pattern of reanalysis involved.

However, if the clitic is merged in AgrS, then the structure on the right of the arrow in (81) must be inaccurate, as it implies that V moves to AgrS despite the fact that AgrS* is satisfied by the clitic which also values the features of AgrS. Moreover, in order to derive the clitic-V order we would have to assume that the verb right-adjoins to AgrS, an option ruled out by Kayne (1994). Poletto (1995) avoids this problem by assuming that V moves to AgrS first (through T) and the subject clitic moves next from a VP-internal position and left-adjoins to the verbal complex in AgrS. However, even this alternative is problematic as the ordering of the movements must be stipulated to be just this, in order to be consistent with the idea that head-adjunction is always left-adjunction.

This problem can be solved in a rather straightforward way: the clitic and the inflected V occupy two distinct (but adjacent) heads. If we want to maintain the idea that AgrS is a single head, then we could say that the clitic is in AgrS, while V is in T. The alternative would be to assume, following more recent work on Italian dialects by Poletto (2000) and Manzini and Savoia (2002), that AgrS is actually split into at least two subcomponents: Pers(on)P and Num(ber)P (in fact, these authors argue that there are further AgrS-projections, but we limit our exposition to these for the sake of simplicity).[33] We thus take it that D on the right of the arrow in (8) is in Pers and V in Num. What this implies is that these dialects have Pers* and Num*. Pers* is satisfied by Merge of the subject clitic, and its features are valued by the same clitic. Num* is satisfied by V movement, and its features are valued by the verbal conjugation. Accordingly, let us restate (81) as (85):[34]

33. The above authors have at least four positions that can be realized by subject clitics. Both Poletto (2000) and Manzini and Savoia (2002) take position 1 (the highest) to be occupied by uninflected clitics, position 2 by 3rd-person clitics (plural in the system of M&S), position 3 by number (3rd-person singular in M&S), and position 4 (the lowest) by 1st- and 2nd-person clitics. In our presentation we gloss over the distinction between the two person positions, that is position 2 and 4, calling the highest one Person and the one immediately below it Number. Following Poletto (2000), we take position 1 to be in the C system (see the discussion of the reanalysis of the vocalic 1sg, 1pl and 2pl clitics below).

34. Applying this system to French, we have to assume that French has Pers* satisfied (but not valued, since French is not a null-subject language) by V movement. As Poletto (1995:307) insightfully points out, the fact that French subject pronouns (which are phonologically clitics according to Kayne 1975, and weak pronouns according to Cardinaletti & Starke 1995, 1999) retain a full set of distinctions may have prevented their being reanalysed in the way that Veneto pronouns were.

(85) $[_{PersP}$ DP$_i$ $[_{Pers}$ V] $[_{NumP}$ . . . $[_{VP}$ t_i . . .
> $[_{PersP}$ $[_{Pers}$ D $[_{NumP}$ $[_{Num}$ V] . . .

So it seems that, after the change in (85), D in Pers and V in Num value the AgrS-features together. This must be accomplished by means of Agree (Pers, Num) (the output of Merge) linking the two AgrS-heads.

In fact, as both Benincà and Vanelli (1982) and Poletto (1993, 2000) point out, it is necessary to make a further distinction among types of subject clitics in the Modern Veneto dialects. In certain dialects, for example Padovano, subject clitics do not appear in contexts where they do not bear their own θ-role. The relevant contexts, as individuated by Benincà and Vanelli (1982:40ff.), are as follows:

(86) a. With the postverbal argument of unaccusative/passive verbs:
(*El) riva to fradèo.
SCL arrives your brother
'Your brother arrives'
b. With subject extraction:
Chi (*el) vien?
Who SCL comes?
'Who is coming?'
c. With weather verbs:
(*El) piove.
SCL rains
'It rains.'
d. With impersonal verbs:
(*El) pare che . . .
SCL seems that
'It seems that . . .'

It is also the case that, in Padovano and a number of other modern dialects, the subject clitic is not required where there is a nominal or (tonic) pronominal argument subject:

(87) Giorgio/lù (el) ride sempre.
George/he SCL laughs always
'George is always laughing.'

As Poletto (1993) points out, the facts in (86) and (87) indicate that the subject clitic requires a θ-role; in (86a, b, d) no such θ-role is available, and in (86b) and (87) the SCL competes with an element bearing a θ-role (presumably, ordinary nominals like those in (87) and subject clitics can enter into a doubling relation, while the wh-trace and the subject clitic cannot, as in (86b)).

The facts in (86) and (87) show that the argumental interpretation of the SCLs is retained after the structural reanalysis in (85); this is also shown by

Poletto's (1995) SVe data. In other words, after the change in (85) the subject clitic marks an argumental Pers, that is cases of Pers which bear the subject θ-role.[35] Where Pers does not bear a θ-role, the subject clitic does not appear (we assume that the subject clitic is optional in (87) depending on whether the DP-subject occupies SpecPersP or a higher position of the kind proposed by Cardinaletti (1994, 1997)). The absence of the subject clitic is connected to the fact that less morphological marking of agreement is required when there is no subject θ-role to be recovered.

As Benincà and Vanelli (1982) and Poletto (1993, 2000) show, many Northern Italian dialects have non-argumental subject clitics. In these varieties, the subject clitic is a pure instantiation of Pers, irrespective of θ-role assignment to this position. This is shown by the fact that subject clitics are obligatory in the environments in (86) and (87). The following examples are from the dialect of Palmanova (Benincà & Vanelli 1982, Benincà 1994:62):

(88) a. El ze rivà Carlo.
SCL is arrived Carlo.
'Carlo has arrived.'
b. Chi rivelo domani?
Who arrives-SCL tomorrow?
'Who arrives tomorrow?'
c. El piove.
SCL rains
'It's raining.'
d. Carlo el ze partío.
Carlo SCL is left.
'Carlo has left.'

It seems that a further change has taken place in this kind of dialect (which is widespread in Northern Italy outside the Veneto area; examples are Friulian, many Piedmontese and many Ligurian varieties), causing the subject clitic to become generalized as a Pers marker. For the moment, we treat this change purely as an unexplained 'generalisation' of the distribution of the subject clitic in this way. It is natural to see this process of generalization as loss of feature content, that is, loss of feature distinctions. We will return to the question of feature distinctions in Chapter 5.

Let us turn now to the invariant vocalic clitics. According to Poletto (2000), these clitics have five main properties in modern dialects. First, they never vary

35. In a more elaborate agreement field, an alternative explanation is possible, once we take Person to correspond to 1st/2nd-person clitics, but not 3rd-person. In this system we would not need to say that the clitic in Person is argumental, given that 1st- and 2nd-person pronouns are necessarily arguments. In other words, the difference would arise with 3rd-person clitics, which could be argumental or expletives.

according to person and in fact show the same form for all six persons in many Lombard dialects:

(89) a. A vegni mi (Lugano (Lombard); Vassere 1993; Poletto, pp. 12–13)
SCL come I
'I'm coming'
b. A ta vegnat ti
SCL SCL come you
'You are coming.'
c. A vegn luu
SCL comes he
'He is coming.'
d. A vegnum
SCL come-1pl
'We are coming.'
e. A vegnuf
SCL come-2pl
'You are coming.'
f. A vegn lur
SCL come they
'They are coming.'

Second, they are in complementary distribution with some wh-phrases:

(90) a. Se (*a) fanu? (S. Michele al T (Friulian); Poletto, p. 25)
what SCL do-they?
'What are they doing?'
b. Do (*a) vanu?
where SCL go-they?
'Where are they going?'

Third, in many dialects, they are optional, and thus appear to play no role in licensing null subjects. Fourth, they always precede preverbal negation, while other subject clitics may follow it. Fifth, they fail to agree with a postverbal subject, but arguably trigger default agreement on V, creating lack of agreement between V and the postverbal subject:

(91) A ze morto do fiole (Bastia di Rovolon (Central Veneto); Poletto, personal communication)
SCL is dead two girls
'Two girls have died.'

On the basis of these properties, Poletto plausibly concludes that these clitics are C elements. Nevertheless, they derive historically from subject pronouns. The diachronic development thus appears to be as in (92):

(92) $[_{\text{PersP}}\ a_{\text{i}}\ [_{\text{Pers}}\ \text{V}]\ [_{\text{NumP}} \ldots [_{\text{VP}}\ \text{t}_{\text{i}} \ldots > \quad [_{\text{CP}}\ [_{\text{C}}\ a\ [_{\text{PersP}} \ldots$

Categorial reanalysis from D to C is illustrated in (92).[36] Again, this change involves structural simplification as the earlier movement dependency involving the *a*-pronouns is lost. In the new system, *a* is merged directly in C. Once reanalysed, *a* loses all sensitivity to person features, as one would naturally expect of a C element. Hence it generalizes to all persons. In the modern Northern Italian dialects, we find variation along these lines. Many Veneto dialects tend to preserve the original system where the *a*-clitic appears with first singular and first and second plural verbs. However, in the dialect of Loreo the clitic has spread to second singular, that is, it is associated with all non-third-person verbs (see Poletto 2000 for an account of this in terms of the split-AgrS system described in note 33). And, as illustrated above, many Lombard dialects have generalized it to all persons.

The changes involving subject clitics that we have looked at up to now involve the reanalysis of the clitics creating a new Merge option. However, Poletto (2000) also mentions the possibility that the verb may (left-)adjoin to a subject clitic, creating a situation in which the clitic appears to be an ending. This has happened with first singular clitics in the Rhaeto-Romansch of S. Leonardo, with second singular, first and second plural in various Lombard varieties (Benincà & Vanelli 1975 discuss both of these; the historic clitics are visible in the endings of the forms *vegna**t***, *vegnu**m***, *vegnu**f*** in (89b, d, e) above) and with an invariant clitic in the Livinallongo dialect (Benincà 1994). In each of these cases, then, we have the development of the Move+Merge option (admittedly for unclear reasons, although, following Paola Benincà (personal communication), we speculate that this is related to the loss of V2, a change which is known to have affected all these dialects). In the next section, we will suggest that this option has also been exploited in Welsh, and possibly in other Celtic languages.

In this section we have seen how subject-clitic systems can emerge from subject pronouns.[37] This involves the creation of new exponents of Pers, and may affect the scope of verb-movement and the value of the null-subject parameter in a given language. Indeed, the development of a subject-clitic system is clearly

36. The position occupied by the clitic *a* could probably be associated with M (see Chapter 3; Zanuttini 1997:29ff. calls the position of the vocalic clitics Mod, and in her analysis it is situated between C and Neg. This is the position that could be identified with our M).

37. The discussion of Poletto (1995) seems to be compatible with the idea that clitics develop out of full pronouns. However, this does not mean that all subject clitics follow the same path of development. Joseph (2001a) discusses the subject clitic *tos* in MG and convincingly shows that it didn't develop out of a full pronoun but analogically to the series of object clitics.

one way in which a language may develop a positive setting for the null-subject parameter. This implies that 'grammaticalization' is an important mechanism in switching the value of the null-subject parameter from negative to positive (on how this parameter may change in the opposite direction, see Adams 1987, Roberts 1993a and Vance 1997 on the history of French). Northern Italian dialects are of particular interest in that the null-subject parameter seems to have changed from positive to negative and back to positive in their recorded history (an observation first made by Vanelli, Renzi & Benincà 1986, see also Roberts 1993a, 2.4 for discussion).

4.6 Affixal agreement: Welsh and Indo-European

In the last section we gave an account of how the clitic systems of Northern Italian dialects developed out of pronouns. Here we turn our attention to how agreement affixes develop. Since the affixes in question are verbal affixes, what we need to add to the account given in the previous section is that the verb adjoins to the position occupied by the subject clitic. On the assumption that adjunction is always left-adjunction (see Kayne 1994), this operation creates the conditions under which the clitic can develop from an enclitic into a verbal suffix. In this way, the first change in the process of developing agreement affixes from pronouns can be schematized as follows:

(93) $[_X$ V $[_{YP}$ DP . . . > $[_X$ V + D $[_{YP}$ . . .

This change is comparable to (81), with the single difference that V and/or the subject are in different positions. To the extent that (93) replaces DP movement to SpecYP with merger of D in X it effects a reduction in movement. V movement appears not to change: on both sides of the arrow in (93) we have V movement to X. We will comment on what X and Y might be, and the question of reduction in movement, directly.

The change in (93) creates the potential for a further change, whereby D develops into a pure verb-agreement suffix from an enclitic pronoun. We schematize this in (94):

(94) $[_X$ V + D $[_{YP}$ . . . > $[_X$ V $[_{YP}$ . . .

In that case, X changes its parameter value from Move+Merge to Move. If X is an Agr-position, then, following what we said in the previous section regarding verb movement and the null-subject parameter, V movement is retained after this change in order to lexicalize and value the features of this Agr-position

through the agreement affix. (Of course, V movement may subsequently be lost if the agreement endings are lost or sufficiently eroded – cf. the comments on the loss of V movement in sixteenth-century English in 2.1.)

We mentioned at the end of the previous section that some Northern Italian varieties have sporadically undergone the development in (93). Welsh appears to have undergone the change in (94) in a more thoroughgoing way. Roberts (forthcoming) argues that in Modern Welsh the agreement endings are subject clitics in Pers which have the morphological property of being inherently affixal and hence of attracting V. Welsh verbs have three simple tenses, whose endings are as follows in contemporary spoken Welsh (King 1993:180):

(95) Non-past tense: *-af, -i, -ith/-iff, -wn, -wch, -an*
Past tense: *-es, -est, -odd, -on, -och, -on*
Conditional: *-wn, -et-, -ai, -en, -ech, -en.*

Unsurprisingly, given the 'richness' of these endings, Welsh is a null-subject language (note that Welsh fits with the generalization made above that verbal agreement licenses null subjects if it allows up to one syncretism). The plural endings in (95) suggest that the tense morphemes are *-w-* (non-past), *-o-* (past) and *-e-* (conditional). In turn, we can see that the plural subject clitics are *-n* (1pl and 3pl) and *-ch* (2pl). Compare these endings with the pronouns in (96):

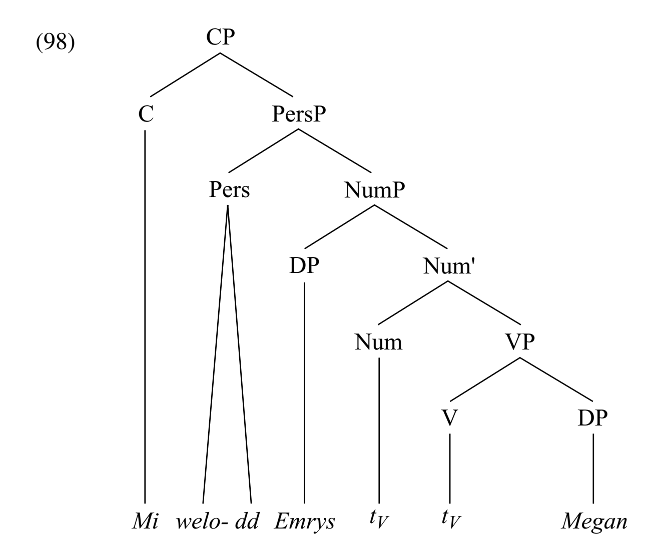
(96) fi, ti, (f)o/(f)e, ni, chwi, nhw

It is clear that the plural endings are related to the pronouns. The singular forms are less easy to segment. However, we can see that the first singular ending in the present is *-f*, which can be related to the pronoun *fi* and the second singular ending in the past is *-t*, which can be related to the pronoun *ti*. Only the third singular endings really do not look like the corresponding pronouns *e(f)/(f)o* 'he' and *hi* 'she' (in any tense). It is also striking that the *-dd* ending shows up in the paradigms of some inflected prepositions, in between what is clearly the prepositional root and the agreement ending: *i-dd-o* 'to-3sgm', *i-dd-i* 'to-3sgf' (cf. Rouveret 1991 for more on the possible morphosyntactic structure of these prepositions). It seems that the unmarked person/number combination, third singular, is literally unmarked; in its place we seem to have, at least in some tenses, a morphological placeholder *-dd*. So we see that, even though more needs to be said regarding the morphophonemic details, the paradigm is considerably less opaque than a typical Romance agreement paradigm. On this basis Roberts proposes that the endings in (95) contain subject clitics in Pers which attract V.

In terms of this structure, a simple sentence like (97) has the structure in (98) (recall that Welsh is a VSO language):

(97) Mi welodd Emrys Megan.
Prt saw Emrys Megan.
'Emrys saw Megan.'

(98)



Given that Pers is occupied by a subject clitic which behaves as a syntactic affix, we can see why V must move there. No DP can move to SpecPersP as Pers' features are valued by the subject clitic in that position (in this respect Welsh resembles the Veneto varieties discussed in the previous section which do not allow a subject clitic to co-occur with a subject DP in the Specifier of the position filled by the clitic). So it seems that the presence of a subject clitic in Pers can 'block' SpecPersP or not. In terms of Roberts' proposals, then, X and Y in (93) and (94) are Pers and Num respectively.

The history of the Welsh verbal paradigms supports Roberts' proposal. Morris-Jones (1913:332–333) observes that the third singular *-ith/-iff* form of the non-past tense in (95) derives from the combination of an *-id* ending, ultimately from Indo-European (the primary ending *-ti*), combined with the initial consonant of the pronoun *fo* (*-id-f* > *it-ff* > *iff*; *-ith* is the variant in North-Western dialects). Also, the first and second plural derive from suffixed pronouns. Morris-Jones points out that the expected second plural ending, given regular sound changes from Indo-European, would be *-ed*. This ending combined with the initial consonant of the pronoun *chwi* (which Morris-Jones refers

to as 'affixed'), giving the ending *-t-ch* from which the *-t-* was then lost. The first plural forms incorporated the pronoun *ni* in a similar way on the basis of analogy. Further, it seems that the first and second singular forms of the present/future of *bod* ('be') have endings that are historically pronouns: in *wy-f* ('am') and *wy-t* ('are'(2sg)), only the stem *wy* regularly derives from the relevant Indo-European/Proto-Celtic root. We can also observe that, although the first singular *-f* can be traced back to the Indo-European primary athematic ending *-mi* it is also relatable to the pronoun *fi*. If plural pronouns were able to attach to verbs and become endings, then we would also expect singular ones to do so, and in this way the pronoun may have 'reinforced' the historically derived ending. The form of the third plural ending in Literary Welsh is *-nt*, a form which is clearly derived from Indo-European (cf. the Latin form). The colloquial *-n* ending may again have been reinforced by the similarity with the pronoun *nhw*. Finally, although Morris-Jones doesn't comment on this, the second singular endings in *-t* are not historically motivated, but are clearly relatable to the second singular pronoun *ti*. (Cf. also Rowlands 1853:75, n. 1).

We conclude, then, that Welsh has undergone the reanalysis in (94) at some point in its history (probably in Old Welsh or Early Middle Welsh to judge by Morris-Jones' comments). More concretely, (93) would have applied as follows with, for example, a second plural subject:

(99) $[_X$ caret $[_{YP}$ chwi ... > $[_X$ care(t) + ch^w $[_{YP}$ ...
love-2pl you love 2pl/you
'You (pl) love' (cf. Morris-Jones 1913:333)

An obvious precondition for this reanalysis is that the verb precedes the pronoun. Of course, this regularly happens in VSO languages. So we expect this development to take place in such languages and not in SOV languages; moreover, given Kayne's result that heads must always left-adjoin to their hosts, we expect it in VSO but not in SVO languages (see also Roberts & Shlonsky 1996 on this point). That it occurs – albeit more sporadically – in V2 languages is also unsurprising, as VS order appears frequently in these languages too (cf. the comment in the previous section regarding the possible connection between the development of clitics into affixes in various Northern Italian dialects and the fact that they were earlier V2 languages).[38]

As we mentioned above, according to Roberts' analysis the Welsh agreement markers retain their clitic status. This is what underlies both VSO order and

38. Middle Welsh was also a V2 language (Willis 1998). However, Welsh has been a VSO language throughout its recorded history, and so this property is presumably the one which favoured the reanalysis in (99).

the anti-agreement effect in the contemporary language.[39] This means that the reanalysis in (93) has taken place, but not that in (94).

It may be that both of these reanalyses took place early in the history of Indo-European. It is an old idea (going back at least to Bopp, see Szemerényi 1996:329ff. and the references given there) that the personal endings of the Indo-European verb are derived from pronouns. Szemerényi also points out that the same can be argued for Finnish, Caucasian and Turkic languages, Hamito-Semitic and Basque. In that case, pronouns may be a very pervasive source of agreement morphology. The reconstructed primary and secondary endings of the singular and third plural are given by Szemerényi as follows (the primary endings are given to the left of the secondary ones in each case):

(100)

	Active		Passive-middle	
1sg	*-mi*	*-m*	*-(m)ai*	*-(m)a*
2sg	*-si*	*-s*	*-soi*	*-so*
3sg	*-ti*	*-t*	*-toi*	*-to*
3pl	*-nti*	*-nt*	*-ntoi*	*-nto*

The origin of the distinction between primary and secondary endings is thought to be a grammaticalized deictic adverb *-i* (see Szemerényi (327) for discussion),

39. Independent evidence that the agreement affixes are clitics comes from the anti-agreement effect, illustrated in (i):

(i) a. Canon
sing-3pl
'They sang'
b. Canodd
Sing-3sg
'He/she sang'
c. Canodd y plant.
Sang-3sg the children (pl)
'The children sang'
d. *Canon y plant.
Sang-3pl the children (pl)

As (i) shows, the anti-agreement effect consists in the fact that the verb cannot agree in number with an immediately following nominal subject, (ic). Where the subject is null, as in (ia), the verb must agree. Where number agreement fails, as in (ic), the default form of the verb is 3rd singular. So we see that number agreement, although morphologically marked, is obligatorily suspended in typical VSO clauses with non-pronominal subjects. Roberts analyses this by saying that the agreement features of Num are checked (or valued) in a head-head relation by Pers in accordance with Chomsky's (2000, 2001) Agree mechanism. This prevents any DP from raising to SpecNumP (and, for Case reasons, from appearing elsewhere in the clause). A DP raises to SpecNumP just where Pers contains a non-agreement-marker – the 3sg form. See Roberts (forthcoming, Chapter 2, section 1) for details.

and so the secondary endings, those without final *-i* are thought to be the original ones. The relationship between the first singular ending and first singular pronouns is transparent (cf. the above remarks on Welsh, where the reflex of *-mi* has been reanalysed as an enclitic pronoun, in effect). Szemerényi argues that second singular *-s(i)* derives from an earlier *-t(i)*, such a form would be transparently related to the IE second singular pronoun **tu*. The third singular ending might be related to the demonstrative **to*, and the third plural seems 'to be of nominal origin'. The first and second plural forms did not show the primary/secondary distinction, according to Szemerényi. The forms were **me* and *$t(h_2)e$ (which appear to be related to the 1sg and 2sg pronouns). The first and second dual endings are also similar to the plural forms, while the third dual resembles the third singular. So it is conceivable that these IE agreement endings may have been derived by reanalysis of the type in (93) and (94). This in turn implies that IE was either a V2 or a VSO language, given the above comments. Of these, the former seems to be much more likely than the latter, given what is known about the syntax of the oldest languages (see Watkins 1996, and the references given there). Old Irish was VSO, but this is usually regarded as an Insular Celtic innovation (Watkins 1962, Russell 1995:281). It seems clear that the passive/middle forms in (100) consist of the original pronoun combined with an extra element, whose nature is obscure.[40]

As just mentioned, Watkins attributes a V2-like syntax to IE. More precisely, on the basis of important work on Vedic syntax by Hale (1987) (see also Garrett 1990 on Anatolian and Kiparsky 1995 on the prehistory of Germanic), Watkins proposes that IE had wh-movement and topicalization operations, in other words at least two different processes of XP fronting into the C system. Under the relevant discourse conditions, the verb could also be fronted. Presumably, this is movement into the C system. Assuming this operation was operative at the very stage when the verbal endings developed is enough to create the environment for the reanalyses in (93) and (94) in what was otherwise a clearly OV system, as nearly all accounts of IE syntax going back to Delbrück (1900) propose.

Naturally, our remarks on Indo-European are rather sketchy and speculative. Nevertheless, we see how our approach can account for the development of agreement morphology. The case of Welsh is quite a clear one, and here we

40. This rather simplified presentation of the reconstructed forms of IE agreement inflections leaves aside a number of issues. There are certainly some IE forms that resist reduction to known pronominal forms: the 1sg primary thematic $-o(h_2)$ and the middle *-r* ending, restricted to the 3pl according to Szemerényi (1996) and Sihler (1995:471), but not according to Watkins (1996:77), are cases in point. See the references and discussion in Szemerényi (1996), Watkins (1996) and Sihler (1995) on these points.

have good evidence that the two reanalyses (93) and (94) are distinct. What should also be clear is that both of these changes are structural simplifications. We will comment more on the relation between the Merge and Move+Merge values of a parameter in Chapter 5.

4.7 Conclusion

The subject matter of this chapter has been the development of different elements in the D system, the third main functional field along with the T system and the C system. As in the other chapters, it is clear that we have by no means exhausted the empirical range of the topic, but we have analysed a number of cases that we believe to be representative, and certain interesting patterns have emerged. We have looked at the development of definite determiners from demonstratives (4.1), n-words and clausal negators (4.2), wh-expressions and existentials (4.3), universals (4.4), agreement clitics from pronouns (4.5) and agreement affixes from pronouns (4.6). The cases in 4.2–4.4 involve, among other things, 'upward' grammaticalization along some part of the extended projection of the Noun: N > Num, Num > D, D > Q. The nature of indefinites as requiring an *Agree* relation with higher elements in the clause is also important here; we related this property to Kamp's (1981) proposal that indefinites lack their own quantificational force. The synchronic and diachronic relations among polarity items, free-choice items, wh-expressions, negative expressions and indefiniteness markers are highly complex and intriguing, and we have only scratched the surface in our discussion here. Nevertheless, we consider that our analyses make the case that the instances of grammaticalization at work here involve upward reanalysis, like many of the cases seen in Chapters 2 and 3.

Another mechanism which is at work here is the reanalysis of XPs as heads. This is relevant to the cases of demonstratives becoming Ds (4.1), the development of clausal negators like French *pas* and Greek *dhen* (4.2), 'whole' becoming 'all' (4.4), free relatives becoming free-choice determiners or universals (also 4.4), pronouns becoming subject clitics (4.5) and subject agreement (4.6). This is a clear case of structural simplification, and was also relevant to the cases covered in Chapters 2 and 3.

Two further important themes have emerged in this chapter. First, we have proposed a way in which agreement markers can develop; this was covered in 4.5 and 4.6. The discussion in 4.6 is particularly important in that it indicates a way in which 'rich' morphology may develop, and as such may be relevant for many other properties. Second, looking at determiners and quantifiers, and to some extent also negation, has helped us to see certain semantic aspects

of grammaticalization. Here we have been able to make a case that 'semantic bleaching' is in fact the loss of non-logical content; this emerged most clearly in the discussion of the development of clausal negators (4.2.3), and the discussion of sources for universals (4.4). We will develop the ideas suggested in these sections further, and consider their possible theoretical import, in Chapter 5.

This concludes the empirical part of our work. Once again, we acknowledge that we have only scratched the surface of what is known regarding the facts about grammaticalization, but we consider that our case-studies are both representative and interesting in themselves. Now it is time to consolidate our results and consider what our case-studies may be able to tell us about functional categories, parametric variation and the nature of language change.

5 Theoretical consequences

5.0 Introduction

In the Introduction and Chapter 1 we provided the theoretical framework that underlies our approach to grammaticalization, focussing on issues pertaining to language change and its relation to acquisition and the nature of parameters. Within this setting we proposed that grammaticalization can be seen as the result of upward reanalysis which affects a subclass of lexical items. As such, its effects in the grammar can be explained and indeed predicted, without at the same time postulating a distinct process or mechanism of change. The empirical evidence for our approach was given in Chapters 2, 3 and 4 where we concentrated on the grammaticalization of T, C, and D elements respectively. Some of the cases we have considered have been treated as typical examples of grammaticalization to the extent that they involve lexical to functional reanalysis (the cases in Chapter 2 for example), while others have not been considered as such, partly because they involve functional to functional reanalysis (e.g. most of the cases in Chapters 3 and 4). In this chapter, we return to the theoretical issues raised in the Introduction and in Chapter 1. Our goal here is to elucidate these as far as possible, in the light of the analyses of the various cases of grammaticalization we have analysed in the preceding three chapters.

We identified three main questions as themes in the Introduction: (i) the ubiquity of grammaticalization – why is this kind of change so common? (ii) the apparent conflict between a descriptively adequate analysis of grammaticalization, which amounts to identifying pathways of grammatical change, and an explanatorily adequate account of syntactic change as parametric change, which predicts random oscillation among possible UG instantiations; (iii) the inventory and nature of functional categories.

In this chapter we will consider each of these issues in turn. In brief, we will argue (i) that grammaticalization is so common because it represents a natural form of endogenous change; (ii) that the conflict between description and explanation in diachrony can be resolved by introducing a notion of markedness

into the parametric system; (iii) for an account of the nature of functional categories which takes them to be inherently deficient in their interface properties. The crucial property of functional categories is that they are only fully defined in relation to the syntactic system; in all other respects they are defective.

Before going into these questions, however, we first review and systematize the cases we have looked at. This will give us a useful synthesis of the results of the previous chapters.

5.1 A general characterization of grammaticalization

In this section we list all the empirical cases that we have discussed so far, by providing a schematic representation of the relevant structural changes. We then identify the parametric change and, where possible, the cause of the change as well. The cases considered so far are thus summarized as follows:

(1) *English modals* (2.1):
 i. Structural change: [$_{TP}$ V+T [$_{VP}$ t_V TP]] > [$_{TP}$ T VP]
 ii. Parametric change: T^*_{Move} > T^*_{Merge}
 iii. Cause: loss of infinitive marker

(2) *Romance future/conditionals* (2.2):
 a. i. Structural change: [$_{TP}$ [$_{VP}$ XP t_{habeo} [$_T$ habeo]]] > [$_{TP}$ XP [$_T$ habeo]]
 ii. Parametric change: T^*_{Move} > T^*_{Merge}
 iii. Cause: morphological irregularity/meaning of *habeo*
 b. i. Structural change: [$_{TP}$ XP [$_T$ habeo]] > [$_T$ Infinitive [$_T$ habeo]]
 ii. Parametric change: T^*_{Merge} > $T^*_{Merge/Move}$
 iii. Cause: reduced productivity of leftward XP movement (‘weakening’ of OV)
 c. i. Structural change: [$_{TP}$ [$_T$ V +Af] [$_{VP}$ t_V]] > [$_{TP}$ [$_T$ V + Af] [$_{VP}$ t_{V+Af}]]
 ii. Parametric change: $T^*_{Merge/Move}$ > T^*_{Move}
 iii. Cause: loss of trigger for $T^*_{Merge/Move}$ (e.g. mesoclisis)

(3) *Greek **tha*** (2.3):
 a. i. Structural change: [$_{TP}$ V+T [$_{VP}$ t_VTP]] >[$_{TP}$ V_1+T [$_{VP}$ t_{V1} + V_2]]
 ii. Parametric change: none
 iii. Cause: loss of infinitival morphology, agreement spreading
 b. i. Structural change: [$_{MP}$ T+M [$_{TP}$ t_TVP]] > [$_{MP}$ M [$_{TP}$ V+T [$_{VP}$ t_V]]]
 ii. Parametric change: M^*_{Move} > M^*_{Merge}, T^*_{Merge} > T^*_{Move}
 iii. Cause: reanalysis of impersonal *thelei*
 c. i. Structural change: [$_{MP}$ M [$_{TP}$ T [$_{VP}$ [$_{CP}$ na +$V_{lexical}$]]]] > [$_{MP}$ tha [$_{TP}$ V+T [$_{VP}$ t_V]]]
 ii. Parametric change: loss of M^*_{Move}, T^*_{Merge}
 iii. Cause: reanalysis of *thelei*+V in the presence of *the na*

(4) *Greek* ***na*** (3.1):

i. Structural change:
$[_{\text{CP}}$ C $[_{\text{MP}}$ *hina* $[_{\text{TP}} \ldots > [_{\text{CP}}$ *oti/na* $[_{\text{MP}}\ t_{na}\ [_{\text{TP}} \ldots$

ii. Parametric change: $C > C^{*}_{\text{Move}}$

iii. Cause: loss of subjunctive morphology, reassignment of Mood features from T to M

(5) *Calabrian* ***mu*** (3.2):

i. Structural change: $[_{\text{CP}}$ AdvP C $[_{\text{NegP}}$ (Neg) $[_{\text{MP}}$ M $[_{\text{TP}} \ldots > [_{\text{CP}}$ C $[_{\text{NegP}}$ (Neg) $[_{\text{MP}}$ M $[_{\text{TP}} \ldots$

ii. Parametric change: none

iii. Cause: loss of subjunctive morphology, reassignment of Mood features from T to M

(6) *English* ***to*** (3.3):

i. Structural change:
$[_{\text{PP}}$ *to* $[_{\text{DP}}$V + *enne*]] > $[_{\text{VP}}$V $[_{\text{CP}}\ [_{\text{MP}}$ *to* $[_{\text{TP}}\ [_{\text{T}}$ V+*enne*]]]]]

ii. Parametric change: $M > M^{*}_{\text{Merge}}$

iii. Cause: loss of infinitives/subjunctives, change in the category of infinitives

(7) *Germanic* ***that***; *Greek* ***pou*** (3.4):

i. Structural change:
$[_{\text{CP}}\ \text{Pron}_i\ [_{\text{C}}\ (\text{Prt})]\ [_{\text{IP}} \ldots t_i \ldots]] > [_{\text{CP}}\ [_{\text{C}}\ \text{that}\ (+\text{Prt})]$

ii. Parametric change: $C^{*}_{\text{Move(Merge} - \text{Germanic)}} > C^{*}_{\text{Merge}}$

iii. Cause: ambiguity of relative clauses

(8) *Serial verbs becoming complementizers* (3.5):

a. i. Structural change:
$[_{\text{CP}}\ C\ [_{\text{TP}}\ T\ [_{\text{VP1}}\ V_1\ [_{\text{VP2}}\ V_2]]]] > [_{\text{CP}}\ C\ [_{\text{TP}}\ [_{\text{T}}\ V_1]\ [_{\text{VP2}}\ V_2]]]$

ii. Parametric change: $T > T^{*}_{\text{Merge}}$

iii. Cause: unknown

b. i. Structural change: $[_{\text{CP}}\ C\ [_{\text{TP}}\ [_{\text{T}}\ V_1]\ [_{\text{VP2}}\ V_2]]] >$
$[_{\text{CP}}\ [_{\text{C}}\ V_1]\ [_{\text{TP}}\ T\ [_{\text{VP2}}\ V_2]]]$

ii. Parametric change: $T^{*}_{\text{Merge}} > T$, $C > C^{*}_{\text{Merge}}$

iii. Cause: unknown

(9) *Romance determiners* (4.1):

i. Structural change: $[_{\text{DP}}\ [_{\text{DemP}}$ *ille*] D. .] > $[_{\text{DP}}\ [_{\text{D}}$ *(il)le*]]

ii. Parametric change: D[+def] > D[+def]*

iii. Cause: loss of morphological case marking on DP

(10) *French n-words* (4.2.2):

i. Structural change: $[_{\text{DP}}\ [_{\text{D}}$ Ø] $[_{\text{NumP}}\ [_{\text{Num}}$ *rien*] $[_{\text{NP}}\ t_{\text{rien}}]]] > [_{\text{DP}}\ [_{\text{D}}$ Ø] $[_{\text{NumP}}\ [_{\text{Num}}$ *rien*] NP]]

ii. Parametric change: Num$^{*}_{Move}$ > Num$^{*}_{Merge}$
iii. Cause: loss of null indefinite D

(11) *French Stage-Two negation of Jespersen's Cycle* (4.2.3):
i. Structural change: V [$_{DP}$ mie/pas/point ([$_{PP}$ de DP])] >
V [$_{Neg}$ mie/pas/point] [$_{VP}$ ([$_{DP}$ Ø de NP])]
ii. Parametric change: (low) Neg > Neg$^{*}_{Merge}$
iii. Cause: loss of non-negative content of negator, reanalysis of *de*-phrase (not *pas*)

(12) *Greek* ***oudhen*** > ***dhen*** (4.2.3):
a. i. Structural change: [$_{DP}$ ou [$_{NumP}$ de [$_{NP}$ hen]]] > [$_{DP}$ dhen [$_{NumP}$ [$_{NP}$]]]
ii. Parametric change: Num* > Num
iii. Cause: loss of *ou* due to phonological change
b. i. Structural change: [$_{NegP}$ [$_{DP}$ oudhen] Neg [$_{MP}$ M [. . . .]]] >
[$_{NegP}$ [$_{Neg}$ dhen] [$_{MP}$ M [. . .]]]
ii. Parametric change: Neg$^{*}_{Move}$ > Neg$^{*}_{Merge}$
iii. Cause: loss of *ou* due to phonological change

(13) *Greek* ***ti(s)*** (4.3):
i. Structural change: [$_{DP}$ D$_{ø}$ [$_{NumP}$ *ti* [$_{NP}$ N]]] > [$_{DP}$ *ti* [$_{NumP}$ Num [$_{NP}$ N]]]
ii. Parametric change: D > D$^{*}_{Merge}$, Num$^{*}_{Merge}$ > Num
iii. Cause: development of determiners

(14) *Greek existentials* (4.3):
i. Structural change: [$_{QP}$ Q [$_{DP}$ *poios* [$_{NumP}$ [$_{NP}$ N]]]] >
[$_{QP}$ *ka* [$_{DP}$ *pjoios* [$_{NumP}$ [$_{NP}$ N]]]]
ii. Parametric change: Q > Q$^{*}_{Merge}$
iii. Cause: (13)

(15) *Free relatives > free-choice indefinites* (4.4):
i. Structural change: [$_{DP}$ [$_{D}$ qui(s) [$_{D}$ ø]] [$_{CP}$ [$_{DP}$ t] C [$_{IP}$ vis t$_{DP}$]]] >
[$_{DP}$ [$_{D}$ quivis] NP]
ii. Parametric change: D$^{*}_{Move}$ > D$^{*}_{Merge}$
iii. Cause: phonological reduction

(16) *Free relatives > universals* (4.4):
i. Structural change: [$_{QP}$ [$_{Q}$ quis [$_{Q}$ que]] [$_{DP}$ D [$_{CP}$ [$_{DP}$ t$_{quis}$]
C [$_{IP}$ . . . V . .]]]] > [$_{QP}$ [$_{Q}$ quisque] DP]
ii. Parametric change: Q$^{*}_{Move}$ > Q$^{*}_{Merge}$
iii. Cause: phonological reduction

(17) *Northern Italian subject clitics* (4.5):
i. Structural change: [$_{PersP}$ DP$_{i}$ [$_{Pers}$ V] [$_{NumP}$ . . . [$_{VP}$ t$_{i}$ . . . >
[$_{PersP}$ [$_{Pers}$ D [$_{NumP}$ [$_{Num}$ V] . . .

ii. Parametric change: $Pers^{*}_{Move} > Pers^{*}_{Merge}$
iii. Cause: paradigm levelling and split

(18) *Welsh agreement* (4.6):
i. Structural change: $[_{Agr}V + D\ [_{YP} \ldots > [_{Agr}V\ [_{YP} \ldots$
ii. Parametric change: $X^{*}_{Move/Merge} > X^{*}_{Move}$
iii. Cause: V movement

In the structures given in (1)–(18) we can identify a number of common properties and, as we will show immediately, reduce them to a single pattern, which we identify as structural simplification (in a way that will be made clear below).

Let us proceed by grouping the changes given above. The first pattern we identify is that exhibited by English modals, the Romance future, Greek *tha* and the serial verb constructions: movement is lost and a new exponent for the higher functional head, which corresponds to the earlier target of movement, is created. The same pattern is found with changes inside the DP: a lower head (Dem, Num, or even N) moves to a higher functional head, such as D or Q, movement is lost and the original moved item becomes reanalysed as the exponent of the higher head. This is in fact the pattern we identify in the structures in (1), (2a), (3), (8)–(10), (12a), (13) and (15). In other words, the lexical item that formerly realized a lower head has now become the realization of a higher functional head. This can be schematically represented as in (19):

(19) $[_{XP}\ Y + X\ [_{YP} \ldots t_{Y} \ldots]] > [_{XP}\ Y = X\ [_{YP} \ldots Y \ldots]]$

What the structure in (19) essentially tells us is that the lexical item which at some point realized both X and Y now becomes the realization of X. This yields the possibility of a new realization for Y.

The second group can be identified with the changes that gave rise to the creation of modal particles, such as *na* and *mu*, discussed in Chapter 3, sections 3.1 and 3.2 respectively. As already argued in the relevant sections, these changes were triggered by the loss of subjunctive morphology. Recall that the morphological realization of the subjunctive was given in the form of a series of agreement affixes which differed from the indicative series. Once the two paradigms collapsed, giving a single paradigm (the indicative), the subjunctive features are now realized in M and take the form of a distinct lexical item, while the different readings associated with the subjunctive are derived from the combination of the particle and the different forms of the finite verb. This change can be schematized as follows:

(20) $[_{XP}\ X_{F} \ldots [_{YP} \ldots Y_{F} \ldots]] > [_{XP}\ X_{F} \ldots [_{YP} \ldots Y \ldots]]$

This change is very similar to that in (19). In fact, to the extent that X's content is exhausted by F, it has the same outcome, namely $[_{XP}\ Y{=}X\ [_{YP}\ Y]]$. The only clear difference between (19) and (20) is that in the latter case it is the features associated with Y that become part of X and not Y itself. In a more abstract sense, though, the relevant structure is changed in the same way. We can bring this out by treating (20) as the loss of *Agree*, and (19) as the loss of Move. Furthermore, in both cases the reanalysis has created new exponents for the Y (namely *na* from *hina* and *mu* from *modo*). This change is also relevant for the development of *to*, summarized in (6): the reanalysis was triggered by the loss of infinitival and subjunctive morphology (as in Greek and Calabrian), creating a new exponent for the realization of these features, namely M* = *to*.

The third group we identify appears to be a bit more complex, as it actually involves two relevant steps and covers all the rest of the cases where a lexical item associated with the realization of the DP becomes the realization of a functional head in the clause structure. The two steps proceed in parallel to some extent, as the changes inside the DP can be taken as responsible for the realization of the clausal functional heads (and vice versa). The first step involves movement of a DP to a higher functional projection, giving a specifier. The second step involves reanalysis of this DP as a head. This is what we find in the development of Greek *dhen*, and the reanalysis of pronominals as Agr heads (subject clitics in Italian, agreement affixes in Welsh, and possibly Indo-European) (the structures in (2b), (11)–(12b), (17)–(18)). The structural change is schematically given in (21):

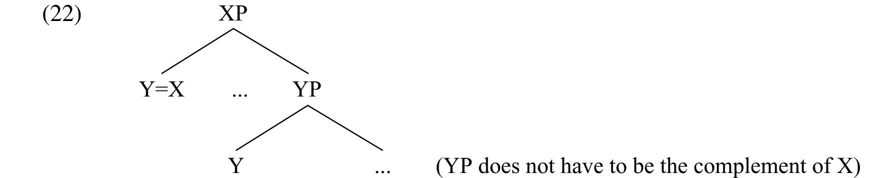
(21) $[_{XP}\ YP\ X..[...t_{YP}..]] > [_{XP}\ Y{=}X..[....]]$

Once again the structural change has created a new exponent for X. A similar account extends to the examples in (11) (French n-words), (15) and (16) (universal quantifiers out of relative clauses) although the difference here is that the reanalysed element is already a head that adjoins to another head. The final case that follows this pattern is that of the complementizers *that* and *pou*, given in (7) and (8): a DP element moves to SpecCP and becomes reanalysed as C. Case (14) comes under this schema too, assuming CG *kan* was originally an XP.

This covers all the changes listed in (1–18), except for (2c) and (3c). In (3c), however, the crucial change really involves the reduction of the biclausal structure to a monoclausal one; the lexical verb moves to the T position of its clause both before and after the change, as finite verbs have done at all periods of Greek (recall that Greek is a null-subject language). Leaving this aside, (3c) amounts to the loss of a piece of structure. Case (2c) does not fall under this

characterization; we will return to it when we discuss markedness in the next section.

As the preceding discussion shows, it is possible to reduce the changes in (1)–(18) (with the exception of (2c)) to the three basic configurations given in (19)–(21). In fact, we immediately observe that the structures in (19)–(21) are one and the same thing, given in (22):



In all cases the reanalysis gives rise to a new exponent for a higher functional head X; this is the formal correlate of grammaticalization.

It is intuitively clear that all of the schemata in (19)–(22) involve structural simplification, in that the structures on the right of the arrow are less elaborate than those on the left. We have mentioned this point repeatedly in our exposition of the individual cases in the preceding chapters. But how exactly is relative simplicity determined? In principle, there are several formal options available in syntactic representations or derivations: one could count nodes, branching nodes, traces, chain links, symbols or features. Counting nodes yields the correct result in (19) and (21), but not (20): here both the conservative (left of the arrow) and the innovative (right of the arrow) structures have the same number of nodes. The same applies if branching nodes are taken as the diagnostic for simplicity. Similar considerations hold if either traces (or copies) or chain links are taken as diagnostic; according to any of these criteria, in (19) and (21) the innovative structure is simpler than the conservative one, but not in (20). Regarding the computation of symbols or features, (20) again poses problems, in that it is not clear that the reanalysed structure has fewer of either of these than the conservative one.

We must therefore go a step further and provide an account which is more in accordance with our notion of parametric variation. The simplification that takes place in all the cases of grammaticalization discussed so far correlates with the morphological realization of features. Prior to reanalysis what we find is one lexical item α spelling out the features of two (or perhaps more) heads X and Y. So what is at stake is α becoming a pure instantiation of the feature content of the relevant head X. This works in the case of loss of movement, as

in (19); Y must have an X feature in order to move. It works in cases like (21), as the original YP (which presumably had more than one feature, in virtue of being an XP – if not, it reduces to case (19)) becomes X. Most importantly in the present context, given our discussion above, it works in the case of (20), where F becomes the sole instantiation of X, having previously been syncretized on Y (recall that the examples of (20) all involve mood markers appearing in M, where previously mood had been part of the verb morphology; we can think of the earlier system as involving an *Agree* relation between M and V (or perhaps T) for mood features, and the change as essentially the loss of *Agree*).

The relevant notion of simplicity is determined by the following simplicity metric (cf. Longobardi (2001a: 294)):

(23) A structural representation R for a substring of input text S is simpler than an alternative representation R′ iff R contains fewer formal feature syncretisms than R′.

Feature syncretism can be defined as the presence of more than one formal feature in a given structural position: H [+F, +G . .]. Thus the structure with the least occurrences of multiple features on single positions is the simplest. Structural simplification should be understood in terms of PF realization of these features, so a lexical item which realizes X and Y is more complex than one which realizes X only. This approach to structural simplification allows us to maintain the idea that there is a universal hierarchy of functional heads, and at the same time capture parametric variation in a rather clear way. One thing that this approach rules out, for example, is reordering of categories.

The metric in (23) works for all the types of change in (19)–(21); where X(P) moves in the conservative structure (i.e. in (19) or (21)), it must have had at least two features, one allowing it to Merge in the original position, and one triggering movement (this is consistent with our approach to parametric variation in terms of PF realization, outlined in Chapter 1, 1.3, which is essentially a way of formalizing movement). In (20), Y originally had more features than just F, which is why it Merges where it does in the conservative grammar.

After the reanalysis, the lexical item α becomes the sole realization of X. If the realization of a given feature X is what parametric variation amounts to, as we assume here, then we can clearly see the link between parameter setting and syntactic change. So we arrive at a formal approach to grammaticalization which is based on parameter setting (we will consider the types of parameter change listed in (1)–(18) in 5.2.3). In this sense, we have reduced grammaticalization to an instance of parameter change.

The general schema in (22) has two more implications. First, it predicts that grammaticalization can be cyclic. In other words, nothing prevents Y from being reanalysed again, yielding further new exponents for X. This is indeed a desirable result and one that seems to be supported by the empirical data. Second, it predicts that grammaticalization can be successive, namely once Y has been reanalysed as X, it can further be reanalysed as an even higher functional head Z. Indeed, we have already shown how this works in our discussion of the empirical cases in the previous chapters. The reanalysis of modals is a clear example. Recall that in Chapter 2, section 2.1 we argued that the dynamic (root) versus epistemic modal readings can be structurally distinguished in the following way: dynamic modals are merged in v, while epistemic ones merge in T (and lexical verbs are simply merged in V). This way we are in a position to define the 'path' of reanalysis: from V (lexical), to v (dynamic/root), to T (epistemic), with the possibility of further reanalysis as C, as we argued for in the case of the modal *thelei* in Greek (section 2.3). Therefore our approach allows us to capture the path of the structural change in the grammaticalization cases along the hierarchy of functional heads. The development from root to epistemic modals is a typical grammaticalization path, and we can capture it nicely. Successive upward reanalysis along the functional hierarchy is thus how we define grammaticalization paths. Furthermore we see that the path is always upwards.[1] We return to this point in section 5.2.2.

Finally, note that this characterization of grammaticalization does not rely on an earlier stage involving visible movement, either of a head or of an XP. That is one option, but the option in (20), namely the loss of Agree, also falls under the general characterization driven by (23).

5.2 Grammaticalization and the theory of language change

5.2.1 Structural simplification and language acquisition

In Chapter 1 we discussed the correlation between language change and language acquisition, following Lightfoot (1979, 1991, 1998). The idea has been that parametric change is triggered when a population of acquirers converges on a given parametric setting which is different from the one adopted by the adult grammar. The question we now need to address is how structural simplification, conceived as 'avoid feature syncretism' in (23), works in the process of language acquisition.

1. Tabor and Closs-Traugott (1998) provide a formulation of grammaticalization in terms of 'Structural Scope Expansion' which is very much on line with our approach. However, they argue that it is not clear that this approach can extend to all cases of grammaticalization.

In Chapter 1 we said that the conservative nature of the language acquirer favours a 'simplified' structure. This term obviously needs to be redefined and/or clarified in the context of the present discussion. As already mentioned we assume that there is a universal hierarchy of functional categories present in all languages. The parametric options are nothing more than options of how the features of these categories are spelled out, if they are. What the language acquirer is faced with is the following: on the one hand, there is the universal order of functional heads which is the same for all languages, or at least a universal pool of functional categories which project in the clause structure in a predicted way. The operations Merge and *Agree* basically see these features and relate them in a rather mechanical way (putting them together in the case of Merge, matching them in the case of *Agree*). This is essentially what the computational system (C_{HL}) does. In a way, this is the invisible side of C_{HL}, which interfaces with LF (and semantic interpretation in general). On the other hand, there is the interface with PF, where these features are pronounced somehow, so the computational system has to ensure that there is some matching between functional features and their realization, that is lexical items. The list of lexical items available to each language is arbitrary. Given this arbitrariness, and given that C_{HL} interfaces with PF, the ideal situation would be if there was a one-to-one matching between lexical items and features. In other words, ideally we would expect that each feature has its own unique PF realization. But what we actually find is a rather blurred picture for a number of reasons: either because in some cases there is no realization for a given feature (which is the ideal situation with respect to the LF side), or in many cases a given lexical item spells out a number of different features. This is the typical situation of what we know as movement. There is one more possibility, namely that a given feature may receive more than one realization, in a way that is contextually determined. Recall the case of *tha* and *na* as modal particles and realizations of M* (Chapter 3, section 3.1). Despite the fact that they both give M a PF realization, they do not trigger the same interpretations. This is because *tha* at least has a subfeature (call it 'future') of the feature irrealis which is one value for M (we discuss subfeatures in more detail in 5.2.3).

Ideally, then, the preferred option is to have a one-to-one mapping between features and lexical items. If this is correct, then this is precisely what the conservative nature of the language acquirer dictates: if a feature must have a realization (because it is unambiguously cued – see below), then the same realization for more than one feature, that is, syncretism, is preferentially avoided. This approach explains why inflectional morphology is so important in syntactic change (this, of course, is hardly a novel observation). Consider the structural

changes in (1)–(18) in the previous section and the cause of the change in each case (where this is known). The 'cause' should be construed as what prevents the acquirer of the earlier grammar from postulating the simpler structure. The cue for the more complex, conservative grammar is in most cases morphology. In other words, the cause is the trigger for the presence of a more complex system (complex in the sense of the notion of simplicity as defined above). So we see that much syntactic change comes from outside syntax, basically from PF (cf. Keenan 1996, Longobardi 2001a on the inertial nature of syntactic change).

We can rather easily support our claim above by looking at each of the cases in (1)–(18), or at least for all those cases where we have some indication for the cause that led to parametric change. Starting with (1) (English modals), we notice that this is due to the loss of the infinitival morphology. This same loss, corroborated by the loss of the subjunctive morphology, is also responsible for the development of *to* as the new 'infinitival' marker, namely for the change in (6). The cases in (4) and (5), that is, of *na* and *mu*, also arise from the loss of the subjunctive morphology, in addition to the loss of the infinitival marking. The last change is partly responsible for the development of *tha* in the *the na* construction (cf. (3), and in particular (3c)), although the initial cause has to do with the loss of a distinct morphological paradigm for the future indicative (which collapsed the future indicative with the past tense subjunctive). This change is also responsible for the development of a periphrastic construction for the expression of the future in (2), followed by further causes such as the morphological irregularity of *habeo*, the reduced productivity of leftward XP movement (probably related to the loss of morphological case – see Roberts 1997a), etc. The same extends to (9): the loss of case marking seems to have given rise to the development of D. In other cases, one reanalysis triggers another one, as is the case in (13) and (14) (the restriction of indefinites as wh-words gave rise to a new series of existential quantifiers in the history of Greek). Finally, morphological levelling is the cause for the reanalysis of subject clitics in (17).

In most of the cases discussed so far, there is an ambiguity in the structure caused by morphophonological changes, or in some cases the ambiguity is purely structural (as in the Greek case of (7) for example). This supports the idea that syntactic change is triggered when marked input is obscured to the language acquirer, who then switches to the default. 'Marked' input here simply means 'input containing feature syncretisms'. As we will show below, following the preceding discussion, we now have a way to define formal markedness in terms of PF realizations.

To summarize, structural simplification can be defined as in (23), that is, as a way of avoiding feature syncretism. Given that the latter is provided by the morphological system, which has to be learned and is furthermore parameterized, we have a clear way of linking the notion of simplification with the process of language acquisition. Once the cue (that is morphology mainly) becomes obscure or ambiguous the conservative nature of the language acquirer will opt for a simplified structure: maximize the correspondence between structure and lexical items. This, of course, yields new exponents for functional features, as is indeed what we get in grammaticalization cases.

5.2.2 Grammaticalization and other syntactic changes

In the present book we have treated grammaticalization as an instance of upwards reanalysis, which gives rise to new functional material. Furthermore, this reanalysis (at least in most of the cases) involves loss of movement (Move > Merge change). In the present section we will compare grammaticalization to other syntactic changes, showing their similarities and differences.

Let us start by considering three well-known cases in the literature, namely the loss of V2, the loss of V-to-I movement, and the OV > VO change, summarized in (24), (25) and (26) respectively:

(24) *Loss of V2*: $[_C [_T V]] [_{TP} \ldots t_T \ldots] > C \ldots [_{TP} \ldots [_T V] \ldots]$

(25) *Loss of V-to-T*: $[_T V] \ldots [_{VP} \ldots t_V \ldots] > T \ldots [_{VP} \ldots V \ldots]$

(26) *OV > VO*: $[_{FP} \text{Obj} \ldots [_{VP} \ldots (V)\ t_{Obj} \ldots]] > [_{VP} \ldots (V)\ \text{Obj} \ldots]$

The loss of V2, schematically represented in (24), has been discussed with respect to a number of languages, for example English (van Kemenade 1987, 1997, Haeberli 1999, Kroch & Taylor 1997, Pintzuk 1991, among others), French (Adams 1987, Vanelli, Renzi and Benincà 1986, Roberts 1993a, Vance 1988, 1997), Northern Italian dialects (Renzi, Vanelli and Benincà 1986) and Welsh (Willis 1998). Schema (25) represents the loss of V-to-T movement in the history of English (Roberts 1985, 1993a, Pollock 1989, Warner 1997, among others. See also Vikner 1997 for Danish.). Finally, (26) is an instance of word-order change, as exhibited in the history of English. The schema in (26) is based on Roberts (1997a), who accounts for this change in terms of Kayne's (1994) antisymmetry approach: OV is the result of object raising to a position higher than that of the verb, so the change from OV to VO involves loss of object movement (see also van der Wurff 1999). In brief, what all the changes

in (24)–(26) share is loss of movement to a higher functional position (C, T, or SpecFP, respectively).

Although the above changes involve loss of movement they are not instances of grammaticalization. Since in our approach grammaticalization has also been related to the loss of movement, the obvious question is how we distinguish between the cases above and the typical cases of grammaticalization discussed in the previous chapters. To illustrate the differences we will focus on the example in (25), namely the loss of V-to-T movement. The reason for choosing (25) is twofold: first, because we can easily compare it to the grammaticalization of T elements, namely modals, in the history of English (see Chapter 2, section 2.1), and second, because the empirical aspects of the change in (25) are more straightforward than the ones in (24) and (26).

The examples in (27) illustrate the presence of V-to-T movement in pre-seventeenth-century English:

(27) a. if I **gave not** this accompt to you
if I gave not (= didn't give) this account to you
(1557: J. Cheke, Letter to Hoby; Görlach 1991:223, Roberts 1999:290)
b. How **cam'st thou** hither?
How camest thou (did you come) here?
(1594: Shakespeare, *Richard III*; Roberts *ibid*.)
c. The Turkes . . . **made anone redy** a grete ordonnaunce
The Turks . . . made soon (= soon prepared) a great ordnance.
(c1482: Kaye, *The Delectable Newsse of the Glorious Victorye of the Rhodyans agaynest the Turkes*; Gray 1985:23, Roberts 1993a:253)
d. In doleful wise they **ended both their days**
(1589: Marlowe *The Jew of Malta* III, iii, 21; Roberts *ibid*.)

The finite V precedes negation in (27a), inverts with the subject in questions in (27b), precedes the adverb in (27c) and precedes the subject-oriented floated quantifier in (27d). All the above examples then show clearly that V raised to T (and in the appropriate contexts to C as well). The picture is quite different in Modern English: the verb cannot raise to T or C. It is in part for this reason that negation and question formation trigger *do*-support.

The loss of V movement has been related to the loss of inflectional morphology. Vikner (1997:200) formulates the following condition on V-raising:

(28) An SVO language has V-to-I movement if and only if person morphology is found in all tenses.

Whether (28) needs any refinement or not does not affect our present discussion (see, for example, Alexiadou & Fanselow 2001, Bobaljik 2000 for criticisms).

What is crucial is the fact that the reanalysis in (26) affected all lexical verbs and, moreover, left T with no lexical realization in the relevant context. In this respect the change in (26) can be abstractly represented as in (29):

(29) $[_{XP}\ Y + X\ [_{YP}\ t_Y]] > [_{XP}\ X\ [_{YP}\ Y]]$

The changes in (24) and (26) are similar to (29) in obvious ways. The structure in (29) is also an instance of structural simplification, in the sense that the realization of X under movement is no longer present after the reanalysis. If this is correct, then we need to outline what the difference is between (29) and the structural simplification we get in grammaticalization, as in (22) in section 5.1, repeated below as (30):

(30) $[_{XP}\ Y + X\ [_{YP}\ t_Y]] > [_{XP}\ Y = X\ [_{YP}\ Y]]$

The input in (29) and (30) is the same, but there is a clear difference in the output, as the structure on the right-hand side of the arrow shows in each case.

Schema (29) expresses the loss of V movement, while (30) expresses the grammaticalization of modals, as discussed in Chapter 2, section 2.1. Given the two sets of data and the relevant structures, it is rather easy to identify the differences between the two. First, unlike the loss of V-to-T movement in (29), the grammaticalization of modals under (30) created a new realization for T (T^*_{Merge}). Second, the reanalysis in (29) is 'downwards', while grammaticalization is an instance of 'upwards' reanalysis. Third, while loss of V raising in (26) affected the whole class of lexical verbs, grammaticalization affected a subclass of verbs with a number of properties in common (they are intensional, tend to lack argument structure, and are subject to morphological irregularities, see 2.1). Fourth, grammaticalization is associated with semantic 'bleaching' and phonological reduction (for example the modal *will* lost its argument structure and failed to express volition, and the contracted form shows up from about the time of the reanalysis – see Plank 1984). On the other hand, 'downward' reanalysis as in (29) has no such consequences. Finally, 'upward' reanalysis can be cyclic, in that it creates the possibility for further reanalysis of the same type (in (30) a new exponent of Y can undergo the same process – see 5.1). 'Downward' reanalysis, on the other hand, cannot do this unless there is an intervening grammaticalization of something else as X, since X must be functional because the target of movement must be functional.

The differences between the two types of reanalysis are summarized in (31) and (32) below. The characterization in (31) covers all the changes in (24)–(26)

which involve loss of movement, but are not instances of grammaticalization, while (32) expresses the properties of grammaticalization:

(31) ‘Downward’ changes, as in (24)–(26):
a. apply to all members of Y;
b. do not change category of Y;
c. involve no semantic or phonological change to Y-roots;
d. cannot be cyclic.

(32) ‘Upward’ changes, as in (30):
a. apply only sporadically or to morphological subclasses of Y;
b. change category of Y;
c. are associated with semantic bleaching and phonological reduction;
d. can be cyclic.

What is interesting to note is that the ‘downward’ changes in (31) have no interface effects. For example, the loss of V-to-T movement did not affect the interpretation of lexical verbs (or T for that matter). Neither did the reanalyses in (24)–(26) alter the argument structure of the verbs that were affected (or in the case of (27) the nature of direct objects). Furthermore, the change in (31) does not give rise to any phonological effects in the sense of triggering phonological reduction, etc. (although arguably it affected the PF realization of T). On the other hand, the ‘upward’ changes in (32) have interface effects, as they go along with phonological reduction, and affect the meaning of the reanalysed element (see the loss of volitional meaning on *will* and Greek *thelo* as an auxiliary for example). The absence of interface effects in the case of ‘downward’ reanalysis can be directly linked to the fact that this change does not give rise to functional material, while ‘upward’ reanalysis does.[2]

2. Note that our approach takes the notion of ‘unidirectionality’ to work to the extent that it can be structurally defined. In this respect we differ from standard functionalist approaches to grammaticalization (but see note 1). Furthermore, there is nothing in our approach that prevents instances of degrammaticalization from taking place, yielding a lexical category out of a functional one (cf. the cases discussed in Newmeyer 1998, Chapter 5). In Chapter 4, note 21, we mentioned the case of *me:dhen* > *midhen* (= zero) in Greek, which involves a quantifier becoming a lexical category (noun). We can account for this on the assumption that the other negative quantifiers dropped out of the system (and *oudhen* became the negator *dhen*), and *me:dhen* was no longer analysed as an element consisting of two (or three) morphemes, but was reanalysed as a single lexical item. This is further supported by the fact that as a Noun it can be preceded by the definite article (e.g. *to midhen*). We will not discuss these cases here, but we think that this is a rather good example to show that in our terms degrammaticalization is indeed possible, albeit rather sporadic. On the other hand, grammaticalization is much more pervasive and systematic.

As the above discussion shows, our approach can sufficiently express grammaticalization and furthermore distinguish it from other cases which also involve loss of movement, by formulating it in terms of 'upward' versus 'downward' change. In this way we can capture the similarities of the two types of changes and at the same time explicitly state that only grammaticalization gives rise to new functional material. Finally, it is interesting to note that one further similarity that the two changes share is that the cause can be identified with morphological changes: for example, as already mentioned, the loss of V-to-T movement relates to loss of agreement marking, and the OV > VO change to the loss of case distinctions (the cause for the loss of V2 is rather less clear).

5.2.3 Descriptive and explanatory adequacy in diachronic syntax

In this section we address three issues. First, we return to the question of the tension between descriptive and explanatory adequacy adumbrated in the Introduction. We resolve this tension by adopting a particular point of view regarding markedness of parameter values, which is defined in terms of the simplicity metric in (23). Second, we show how the majority of the parameter changes listed in (1)–(18) are changes from a marked to a less marked value. Third, we show how change from unmarked to marked is possible in this context, looking at the change in (2c) above. This completes the picture of syntactic change that we want to present here.

As we said in the Introduction, the study of grammaticalization raises the familiar tension between descriptive and explanatory adequacy in the diachronic domain. A descriptively adequate account of this class of changes results in defining pathways of change. In our terms, as we mentioned in 5.1, pathways of grammaticalization are defined by the functional hierarchy through which grammaticalized material can travel by means of successive upward reanalyses. Thus grammaticalization pathways can be deduced from the functional hierarchy (and possibly vice versa), once upward reanalysis is taken as a basic mechanism of syntactic change. However, if we take parameter setting to be an explanatory notion for syntactic change (and, to the extent that we are to make the connection to language acquisition, as in section 5.2.1, it is), then we are led to an apparent difficulty. In principles and parameters theory, parameters can be thought of as creating a space of variation in which individual grammatical systems are distributed. Synchronically, different systems are viewed as scattered in this space. Diachronically, they randomly 'walk' around the space as a function of time. This view is not compatible with the existence of diachronic drift, pathways of change, etc., a point repeatedly and cogently made by Lightfoot

(see in particular Lightfoot 1979, 1998). So, as stated in the Introduction, we must reconcile the evidence for pathways of change at the descriptive level with the fact that an explanatory account of syntactic change must involve random parameter change.

Following Clark and Roberts (1993, 1994) and Roberts (2001), we propose that a version of the traditional linguistic concept of markedness is able to resolve this tension. The relevant notion of markedness is rooted in the simplicity metric, which we repeat here:

(23) A structural representation R for a substring of input text S is simpler than an alternative representation R′ iff R contains fewer formal feature syncretisms than R′.

Now, we stated in the last section that movement operations are always associated with feature syncretism. Since a moved element has one feature licensing it in its merged position and one triggering movement (or *Agree* – see the discussion in 5.1), then movement is always associated with relatively complex representations. Let us suppose, then, that F^*_{Move} is a marked option relative to F, precisely because it entails a more complex representation than F in terms of (23). Also, if the absence of a phonological matrix is simpler than the presence of a phonological matrix (since a phonological matrix consists of features, this could be related to (23)), F^*_{Merge} is relatively marked as compared to F, but less marked than F^*_{Move} as it lacks the features relevant for triggering movement. Finally, we consider that $F^*_{Move/Merge}$ is the most marked option of all, as this involves two phonological matrices and the features involved in triggering movement. So we arrive at the markedness hierarchy for parameter values in (33) (where '>' means 'more marked than'):

(33) $F^*_{Move/Merge} > F^*_{Move} > F^*_{Merge} > F$

Relatively marked parameter values require overt, robust cues. In the absence of such cues, a less marked option is taken, with F as the default. As we pointed out in the previous section, the notion of 'cause' of the changes in (1)–(18) above, should be understood as the factor cuing a relatively marked setting.

Let us look at these ideas in the light of the definitions of P expression and trigger given in Chapter 1, section 1.1:

(34) *Parameter expression*:
A substring of the input text S expresses a parameter p_i just in case a grammar must have p_i set to a definite value in order to assign a well-formed representation to S.

(35) *Trigger*:
A substring of the input text S is a trigger for parameter p_j if S expresses p_j.

Given markedness, only marked values of parameters need to be expressed. P-expression then reduces to:

(36) a. expression of movement relations (through syntactic 'displacement')[3]
b. expression of free functional morphemes (through PF realization)

More generally, acquirers are looking for overt realizations of functional heads. If they analyse a functional head as $[_F\ F\ ]$, we have the F^*_{Merge} option. If it is analysed as $[_{F(P)} G\ F\ ]$ (where G stands for moved material of any kind), we have the F^*_{Move} option, or, if F has its own phonological realization, $F^*_{Move/Merge}$. The crucial point, however, is that the conservative nature of the learner, since it prefers maximally simple representations in the sense defined by (23), always favours the default option F. So, if the elements and relations which lead to one of the complex realizations of F are not robustly expressed in the trigger, the default option is chosen.

Let us now consider the markedness hierarchy in (33) in relation to the changes summarized in (1)–(18). We have the following picture:

(37) a. $F^*_{Move/Merge} > F^*_{Move}$: (2c), (18)
b. $F^*_{Move} > F^*_{Merge}$: (1), (2a), (3a), (3b), (7),[4] (10), (12b), (13), (15), (16), (17)
c. $F^*_{Merge} > F$: (3c), (12a)

The clear majority of the changes involve reductions in markedness. The three types of markedness reduction seen in (37) correspond to different subtypes of grammaticalization mentioned in the literature: (37a) creates new morphology; (37b) is 'true' grammaticalization, in that it creates a realization of a new functional head; finally, (37c) is loss of realization (note that Stage Three of Jespersen's cycle, discussed in 4.2.3, would be a further case of this type of change: $Neg^* > Neg$ applying to a 'high', C- or T-related, Neg).

However, on the basis of what has been said so far, some of the changes in (1)–(18) seem to involve an increase in markedness. This is the case for (2b), (4), (6), (8), (9), (11) and (14). Let us consider these more closely.

First, the change in (2b) involved the cliticization of *habere* and its attraction of the infinitive. The infinitive movement was reanalysed from (possibly remnant) XP-movement of the category containing the infinitive to SpecTP;

3. 'Displacement' refers to a perturbation of the expected order, which we take to be given by UG in the form of a functional hierarchy. We will discuss the functional hierarchy in 5.3.4.

4. In Greek; in Germanic, this was a case of $F^*_{Move/Merge} > F^*_{Merge}$.

this was arguably a facet of the general OV-to-VO shift which took place in the transition from Latin to Romance (see Chapter 2, 2.2 for discussion and in fact an alternative analysis). Strictly speaking, the earlier structure was also an instance of $F^*_{Move/Merge}$, since we are not distinguishing XP movement and head movement. In that case, what changed in Late Latin was XP movement becoming head movement, which can certainly be seen as a simplification (and one which needs to be built into a refinement of (33) – see below). But how does $F^*_{Move/Merge}$ arise in the first place? This is a question which must be addressed, if we are not to predict that such options are so marked that they could never exist in the first place. Recall that the $F^*_{Move/Merge}$ option arose from an earlier structure in which *habere* moved to T, via the standard case of grammaticalization Move > Merge. It seems, then, that the marked structure arose in part from a reanalysis of the head which made it less marked. Thus we can consider that $T^*_{Move/Merge}$ arose from a still more marked option: $T^*_{Move/Move}$, that is, the case where T* attracts two elements, a head and a specifier. In this sense, the reanalysis in (2b) in fact involved a reduction in markedness. But, of course, we now have to explain how $T^*_{Move/Move}$ arose. We conjecture that this option arose from T^*_{Move}, via a reduction in feature content of the attracted element, thereby requiring that two things move in order to satisfy the property of the attractor. For example, in the case under discussion it is possible that Latin *habere* was already a light verb v, and that T required an element with a 'full' V feature. Hence, VP movement is introduced (itself possibly a reanalysis of an earlier nominal infinitival – see 2.2). Although the technical details are uncertain,[5] this sketch shows us how simplification of the attracted element (reduction of *habere* from V to v) in line with (23), may create complexity elsewhere. The local nature of simplification is what creates complexity, and what prevents language change from leading to irreversible simplification.

The changes in (4) and (6) are very similar, as we mentioned in Chapter 3. Here new instantiations of M develop through the loss of feature syncretism elsewhere. Recall that the mood markers developed in Greek and English due to the loss of infinitival/subjunctive marking on the verb. Effectively, then, where the earlier system had Agree and feature syncretism on V (or T), the new system has no Agree relation and no feature syncretism. This is a simplification in terms of (23). It may appear that there is an increase in phonological markedness, but in fact this is not true: in the earlier system verbal morphology marked mood distinctions, and these distinctions were eradicated. So these cases are

5. In Chomsky's (2000, 2001) terms, we could say that T had an EPP feature. However, it is entirely unclear how this property could be innovated.

straightforward examples of simplification that are not directly captured in terms of the markedness hierarchy in (33). What is needed is a further option F^*_{Agree}, which, like F^*_{Move}, is more marked than F^*_{Merge}. It is likely that F^*_{Agree} is less marked than F^*_{Move} (since Move involves a further component, indeed in Chomsky's terms a further feature, in addition to *Agree*).

The development of serial verbs, shown in (8), may be a further case of feature simplification. We can note that T inherently has less feature content than V, as it lacks argument structure (see the next section on the loss of argument structure under grammaticalization). It is at least possible that C has less feature content than T (note that fewer temporal distinctions are made in the C system than in the T system – see Rizzi 1997). So this change may well be consistent with (23).

Finally, the changes in (9), (11) and (14) all involve the loss of feature content on the part of the grammaticalised element (Dem > D, Num/N > Neg, focus particle > Q), and hence are in conformity with (23).

So we see that all the changes in (1)–(18) are in conformity with (23). We now have the more elaborate markedness hierarchy (33'):

(33') $F^*_{Move/Move} > F^*_{MoveXP/Merge} > F^*_{MoveX/Merge} > F^*_{MoveXP} > F^*_{MoveX} > F^*_{Agree} > F^*_{Merge} > F.$

The simplicity metric in (23) is, of course, the fundamental notion; the hierarchy in (33'), derives from (23). Most importantly, the changes in (37a) show how new synthetic morphology may be created, despite the fact that (23) may appear at first sight to favour analyticity. It is interesting to note that in these cases other aspects of word order (OV or VS) are relevant to creating the environment in which new morphology can emerge. New morphology does not readily emerge in SVO languages, it seems, and we can observe that in such languages (English, Romance) there is a clear historical tendency towards analyticity. (23) can explain this, a good example of how we can combine parametric analyses of change with an account of diachronic drift.

We would now like to compare briefly our notion of markedness with recent proposals of Cinque's (1999) (the following discussion is based on Roberts (2001:105–107)). As part of his study of clause structure across languages, Cinque observes that functional heads seem to have both marked and unmarked values. A selection of these is given in (38):

(38)

	$Mood_{Speech\ Act}$	$Mood_{Evaluative}$	$Mood_{Evidential}$	$Mod_{Epistemic}$
Unmarked:	declarative	−[−fortunate]	direct evidence	commitment
Marked:	−declarative	−fortunate	−direct evidence	−commitment

The observations of marked and unmarked values are based on familiar criteria: marked features are ‘more restricted [in] application, . . . , less frequent, conceptually more complex, expressed by overt morphology’ (p. 128), while unmarked features are the opposite. Note in particular that marked features tend to be morphologically realized while unmarked features do not.

How does this kind of markedness (which we will refer to as ‘Jakobsonian’) relate to the proposals we have just made? The two notions are quite distinct, in several important respects. First, Jakobsonian markedness refers to values of functional heads, while the one just sketched refers to realizations of those heads. Second, Jakobsonian markedness is not parameterized: the features are available in every language, and (presumably) stand in the same markedness relations in every language – Jakobsonian markedness is thus given by UG, while the one just sketched derives from a formal property of the learning algorithm. They are thus quite different kinds of thing. Third, Jakobsonian markedness is a substantive notion (note the reference to conceptual complexity in the above quotation from Cinque), while that just sketched is a formal notion.

So there are very good reasons to keep the two kinds of markedness distinct, as formal (the one sketched here) and substantive (Jakobsonian) notions with quite different cognitive status (the former deriving from the learning device, the latter from UG). However, two things lead us to say a little more than this. First, common to both notions is the idea that overt morphophonological realization is marked, while zero realization is unmarked. Second, there are very significant cross-linguistic generalizations in Cinque’s version of substantive markedness that we would like to find an expression for.

Tentatively, we think that the two notions of markedness can be connected by taking a lead from Cinque (who takes it from Jakobson (see Cinque 1999:128ff.)) in regarding unmarked values as, in a sense, underspecified. What is needed is a feature hierarchy. Functional heads, as features F, G, H . . . , can come with various further feature specifications f, g, h . . . (we write the subfeatures with lower case and potentially autonomous functional features with upper case). We can then treat unmarked values of functional heads as simply the autonomous functional feature F, while the marked value will have a further subfeature, giving F+f. So $\text{Mood}_{\text{Speech Act}}$ (or Force, or C; hereafter we refer to this category as C for convenience) means ‘declarative’, while C[−declarative] means non-declarative. Of course, on this view, [−declarative] doesn’t exist (and neither does [+declarative], this being the unmarked value of the category C). What exist are other speech-act features: Q, Exclamative, Imperative, etc. These are all subfeatures of C. In other words, instead of saying that we

have C with the two values [±declarative], we have C = Declarative by default and C = Imperative, Interrogative (etc.) as marked subfeatures.

Now, if the parameterization operator, which randomly distributes the * in the lexicon, applies to all types of features, F+f will have two chances of PF realization, while F will only have one. Thus, marked feature values are more likely to be overtly realized than unmarked ones and we derive implicational statements of the form 'If a language has a declarative particle, then it has an interrogative particle', etc., from the fact that where F^* must be realized then so must all subfeatures of F^*. Note that this idea carries over to the F^*_{Move} case, which seems right. In many languages, for example, marked illocutionary forces are associated with movement to C, while declaratives are not (this is approximately the situation in 'residual V2' languages like Modern English). So we also derive the (correct) implicational universal 'If a language has movement to C in declaratives, then it has such movement in interrogatives, etc.'.[6]

There is an independent reason to adopt some concept of markedness in current principles-and-parameters theory (this argument was made in Roberts 2001:89–92): the parameter space as currently defined offers too many choices for comparative or historical work to be possible. Assuming (i) that functional categories are the locus of parametric variation, and (ii) the parametric system in (33) rather than that in (33'), and (iii) that we have four potential parameter values per functional head, then for n = |F|, the cardinality of the set of functional heads, the cardinality of the set of parameters |P| is 4n and the cardinality of the set of grammatical systems is 2^{4n}. Assuming, again conservatively, four heads in the C system (see Chapter 3 and Rizzi 1997), four heads in the T system (T, Asp, Neg and v) and four in the D system (see Chapter 4), we have $n = 12$. Then $|P| = 48$ and $|G|\ 2^{48}$. This is a very large space indeed, and bear in mind that this is based on fairly conservative decisions about functional structure and parametric variation (and note that we have not taken into account the functional structure associated with AP, for example). In a discussion of a

6. One could extend this line of reasoning, following recent proposals by Giorgi and Pianesi (1997), and say that F can be entirely absent from the representation, but will be 'read in' at LF by convention. On the other hand, F+f has to be syntactically present in order to be interpreted. Once syntactically present, F+f is parameterized, and so might be PF-realized. Cinque (p. 133) criticizes the Giorgi and Pianesi approach on the grounds that it leads to two ways of giving a default value for F: F is either present with the default value or absent and interpreted with a default value. In terms of the proposals being made here, though, we could think that F can only be present with a default value if PF-realized, and this is a case of formal markedness, as defined here, and so distinct from the maximal default. The maximally unmarked case is where F has no PF-realization and the default LF interpretation. It is natural to think of this as the absence of F from the numeration. What this idea requires, of course, is a theory of LF which can tell us how the defaults are filled in.

thirty-parameter system, giving 1,073,741,824 grammars, Clark (1990) points out that a learner which checks one grammar per second from birth would in the worst case take thirty-four years to converge if this is the number of possible grammars. Hence there must be a learning device which facilitates the search in this space.

We can make a similar argument on the basis of diachronic considerations. Two assumptions are generally made in all comparative and historical linguistics (in fact, they really make historical linguistics possible, and have done since the beginnings of the discipline). These are articulated by Croft (1990) as follows:[7]

(39) a. Uniformitarianism: 'the languages of the past are not different in nature from those of the present' (Croft 1990:204);
b. Connectivity: 'within a set of attested language states defined by a given typological classification, a language can . . . shift from any state to any other state' (Croft 1990:205).

We can reformulate these assumptions in terms of principles-and-parameters theory as follows:

(40) a. Uniformitarianism: the languages of the past conform to the same UG as those of the present;
b. Connectivity: a grammatical system can change into any other grammatical system given enough time (i.e. all parameters are equally variable).

Put this way, both assumptions seem entirely reasonable. To deny (40a) would be to assert that speakers of languages of the past were cognitively different from speakers of currently existing languages. Presumably, though, at least as far back as the origin of modern *homo sapiens*, we do not want to say this. Effectively, (40a) is the null hypothesis regarding the relation of UG to language change. Furthermore, denying (40b) would imply 'privileging' certain parameters, a conceptually highly dubious move for which there seems to be no empirical motivation: (40b) is the null hypothesis regarding the role of parameters in language change. So we want to maintain the assumptions in (40).

Now, at present approximately 5,000 languages are spoken (Ruhlen 1987). Suppose that this figure is constant throughout human history (back to the emergence of *homo sapiens*), and that every language changes with every generation,

7. The concept of uniformitarianism was first put forward by the eighteenth-century geologist James Hutton. Hutton's idea was that the features of the earth had evolved over long periods of time through processes of erosion, etc., rather than having been divinely created. The term became known thanks to Lyell (1830). See Ruhlen (1987:25ff.).

so if we have a new generation every twenty-five years, we have 20,000 languages per century. If the total number of grammatical systems is 2^{30} (following Clark's (1990) discussion, it would take 18,000 centuries for each type to be realized once. At present, the usual reckoning is that humans have been around for about 2,000 centuries (i.e. 200,000 years – see for example Bickerton 1991). Of course, the figures given here are rather arbitrary, but the point should be clear: given the kind of parameter space we seem to have, on the basis of the empirical examination of existing languages, there simply has not been enough time since the emergence of the species (and therefore of UG) for anything like the total range of possibilities offered by UG to be realized. This conclusion effectively empties uniformitarianism and connectivity of content. In theory, we simply couldn't know whether a language of the past corresponded to the UG of the present or not, since the overwhelming likelihood is that it is typologically different from any language that existed before or since.[8]

One might conclude that thirty parameters define too big a parametric space, but, as we have seen, we have here rather conservatively given ourselves a 48-parameter system. We are again faced – in a different context – with the familiar tension between the exigencies of empirical description, which lead us to postulate ever more entities, and the need for explanation, which requires us to eliminate as many entities as possible. Chomsky (1995:4–5) notes that the principles-and-parameters model resolved this tension for synchronic comparative syntax, but we see that the problem re-emerges at a higher level.

It seems, then, that the parameter space is too big for the assumptions of uniformity and connectivity to have any empirical consequences. Since uniformity represents the null hypothesis about the relation of UG to change, and connectivity the null hypothesis about parametric change, this conclusion appears to cast doubt on the entire enterprise of looking at syntactic change from the point of view of principles-and-parameters theory. This is the conceptual problem caused by the size of the parameter space.

8. Kayne (2000:6–8) discusses the number of parameters and the number of grammatical systems, and makes an interesting and rather plausible case that there are at least as many grammatical systems in the world as there are people, i.e. upwards of 5 billion. Despite initial appearances, this conclusion does not alter the point being made in the text: if there are so many grammatical systems, then vast numbers of them differ only slightly from one another. But we still need to allow for 'macrovariation' in gross properties such as basic word order, etc., and so still need to allow in principle for a wide typological range. Essentially, Kayne's argument leads one to the conclusion that there may be more different grammatical systems in the world than is usually thought, but they are all clustering around the same basins of attraction. Markedness must, if anything, be a more powerful attractive force in the parameter space if Kayne is right.

The size of the parameter space also raises an empirical issue: the fact that on the basis of a small subset of currently existing languages we can clearly observe language types, and note diachronic drift from one type to another, is simply astonishing. The view presented above implies that, as far as the history of humanity up to now is concerned, languages should appear to vary unpredictably and without assignable limits, even if we have a UG containing just thirty or so parameters. Obviously, we need to find ways to reduce the range of parametric possibilities while retaining (at least) thirty parameters.

Something must be causing grammatical systems to 'clump' in the parametric space, rather like galaxies in the physical universe. What is the parameter-space equivalent of the forces that cause stars to bunch together into galaxies, etc.?

We would like to suggest that the traditional linguistic concept of markedness creates basins of attraction in parameter space. In other words, unmarked values of parameters can effectively reduce the possible space that grammatical systems occupy, and so reduce the hyperastronomical range of possibilities (2^{30}, 2^{48}, etc.) to a sufficiently small range of possibilities for language types and diachronic drift to be discernible. Given the general considerations about the relation between language types, language acquisition and language change raised in the previous section, the attractors – markedness – must be introduced by the learning algorithm. This is exactly what we have proposed here, and so our approach to markedness has independent motivation.

5.3 On the nature of functional categories

5.3.1 'Semantic bleaching' and the logical nature of functional categories

In the preceding discussion we have basically provided an account of how functional categories can be realized, when they are: by Merge, Move, in some cases by the combination of Merge and Move (cf. syntactic affixation). The development of a Merge realization is what has been identified as the innovation in the cases of grammaticalization. We have provided evidence for this kind of development by considering a number of functional heads, such as T, C (which we argued splits into a number of heads, such as M, Op, etc.), Agr (which is actually a cover term for features such as Person and Number at least), and D (which again splits into a number of heads, such as Dem, Num, and Q at least). The implicit assumption in our discussion has been that these heads have semantic content (cf. Chomsky 1995, 2000, 2001), thus arguing against an approach that postulates heads as pure checking positions. Under this approach the postulation of a series of functional heads is possible to the extent that there is also semantic justification for their presence. The obvious question

is what exactly we mean by 'semantic' content when it comes to functional heads.

The cases of grammaticalization we have considered so far show that lexical (or functional) to functional reanalysis goes along with a change in the meaning of the reanalysed element. In standard grammaticalization theory this is called 'semantic bleaching' (cf. Hopper & Traugott 1993:87 for references). We consider this term indicative of the semantic changes that are associated with grammaticalization, so we will use it without committing ourselves to the theoretical framework where it originated. In order to illustrate how semantic bleaching works we will focus on a couple of cases we have considered in the previous chapters. The lexical to functional reanalysis is perhaps the best way to illustrate the changes in meaning. Recall from our discussion in Chapter 2 that a subset of lexical verbs becomes the realization of a functional head. By doing so it loses part of its own semantic content and becomes compatible with the content which is associated with the head it realizes. The key notion here is that of 'semantic content'. More precisely what needs to be clarified is which part of its lexical meaning is lost and which part remains, so that the reanalysed item can be the realization of the functional position.

Let us then consider modal verbs in English or *thelo* in Greek. These cases show a common pattern: as lexical verbs they have argument structure, and when they become functional elements they have no argument structure. For example, the verb *thelo* in Greek is a 2-place predicate, which takes a DP as an external argument and a DP or CP (*na*-clause) as its internal argument. While there are no clear restrictions on the internal argument, this is not so for the external, which has to be +animate (a –animate subject is incompatible with the volitional reading). We can assume that volitional *thelo* is merged in V and from there it moves to v and T, as shown in (41).

(41) $[_{TP}$ thelo $[_{vP}$ t_{thelo} $[_{VP}$ $t_{thelo}]]]$

Merger of *thelo* in V and then movement to v allows us to capture the fact that it has a complete argument structure.

As already mentioned in Chapter 2, section 2.3, *thelo* in MG can also be non-volitional, in which case it translates as *need*. Under this interpretation it does not impose any restrictions on the subject, but is sensitive to the properties of the complement (e.g. it is incompatible with a definite DP, but compatible with a deverbal nominal which is interpreted as a complex event in the sense of Grimshaw 1990). Furthermore, it is incompatible with perfective aspect, and only allows for a third-person reading (singular or plural) when it takes a *na*-complement (see Roussou 2002a for a discussion). It thus differs in some very

clear ways from volitional *thelo* and although it has some argument structure, it is defective in a rather obvious sense. In our discussion in Chapter 2, we argued that this kind of modal is merged in v, as in (42):

(42) $[_{TP}$ thelo $[_{vP}$ t_{thelo} $[_{VP}$ V]]]

A comparison between (41) and (42) shows how in the case of the same lexical item two different readings emerge with clear effects on the argument structure (and whatever this entails). To be more precise, if the interpretation of the external argument is determined in association with that of the internal one in a configurational approach (cf. Hale & Keyser 1993), then the fact that *thelo* is not merged in V, but in v directly can account for the fact that it is not on its own able to restrict the interpretation of the subject. As a result of this, a [–animate] subject is possible, which is otherwise unavailable. Note that at this point the meaning of *thelo* is also affected in a clear way. As a volitional verb it has the reading 'desire/want/wish', while as a semi-lexical verb it has the reading 'need/require'. In both cases it expresses an unrealized wish or a request for something to happen (posterior to the speech time).[9]

Consider what happens next when *thelo* is reanalysed as a T element: it is obviously not compatible with any argument structure, as at no stage does it appear in V or v. In our discussion in Chapter 2 we argued that once a verbal element is merged in T it is able to assume an epistemic interpretation, namely it can encode necessity or possibility. In the absence of any argument structure, what remains in other words is the purely modal content of a verb like *thelo* (and presumably this is what we find in the history of *thelo* on its way to becoming a future marker). As Bybee *et al.* (1994) argue, this is a change from an Agent-oriented to a speaker-oriented modality. We then notice, as is rather standard, that in each step of reanalysis there is an effect on the semantic content of *thelo* (which as noted above is not independent of what may appear as its complement).

As a result of the reanalyses, *thelo* loses any kind of descriptive content and becomes associated with logical content. To be more precise, it has no predicative properties (i.e. it no longer expresses a relation between two individuals, or between an individual and an unrealized eventuality). What remains is just the modal notion of an unrealized event. The same effect can be observed more or less in the same way for all the other modals under consideration (although

9. Postma (1995) makes a similar point. He postulates that every time a lexical item moves its meaning is affected. Since all movement is to functional positions, the meaning is affected so as to become non-lexical.

the derived meaning can differ as a function of the different lexical source and the feature the reanalysed element realizes). The crucial point is that merger in a functional position and loss of argument structure go together.

So semantic bleaching is not just the random loss of content. It is rather the loss of non-logical content such as argument structure and the retention – in the case of modals – of modal content. We consider this to be an instance of the retention of logical meaning (here having to do with quantification over possible worlds). The notion of logical content is best glossed in terms of permutation/isomorphism invariance (see Mostowski 1957, Sher 1996). The basic intuition is that the logical content is independent of the external factors, or in von Fintel's (1995) words, insensitive to facts about the world. The following quotation from his work captures the intuition behind permutation invariance (p. 179):

> The intuition is that logicality means being insensitive to specific facts about the world. For example, the quantifier *all* expresses a purely mathematical relationship between two sets of individuals (the subset relation). Its semantics would not be affected if we switched a couple of individuals while keeping the cardinality of the two sets constant. There couldn't be a logical item *all blonde* because it would be sensitive to more than numerical relations.

More formally, consider the following definitions from the discussion in Sher (1996:518):

(43) '[Logical] quantifiers should not allow us to distinguish between different elements of [the underlying universe]' (Mostowski 1957:13, parentheses supplied by Sher)

(44) An A-quantifier is logical iff it is invariant under permutations of A (or, more precisely, permutations of P(A) – the power set (set of all subsets) of A – induced by permutations of A).

(An A-quantifier is a set of subsets of a universe A or a function from subsets of A to truth values). In other words, as Sher says 'Q_A is logical iff for any permutation p of A and any subset B of A, $Q_A(B) = Q_A(p'(B))$, where p' is the permutation of $P(A)$ induced by p' (p. 518). The definition is elaborated as follows ((45) is attributed to Lindström 1966):

(45) A term is logical iff it is invariant under isomorphic structures. (Sher 1996:520)

Here a 'structure' means an n + 1-tuple, $<A, <D_1, \ldots D_n>>$, where $A \neq \emptyset$ and D_i, $1 \leq i \leq n$, is a member of A, a subset of A or a relation of A. Again, a quotation from Sher can elucidate this definition: 'A term invariant under isomorphic

structures takes into account only the mathematical structure of its arguments in a given universe. Since individuals are, semantically, atomic elements, they are all structurally identical, and their difference is not detected by any logical (structural) term' (p. 521). Sher points out that the definition in (45) includes the following elements as logical: cardinality quantifiers, the 1st-order identity relation and 'most'-type quantifiers, 'more than', the membership predicate and the relational predicate 'well-ordering'. These are elements (with the possible exception of the last one, but cf. the remark on Tense below) which are naturally construed as D or T elements. The definition in (45) excludes predicates such as 'is tall', 'is a relation between humans', etc., that is, lexical predicates.

We believe that (45), or something very like it, may be the key to a formal characterization of the nature of functional categories. It then follows that lexical material which grammaticalizes as functional material loses all semantic content which cannot be construed under (45). For verbs, this entails the loss of argument structure; for nouns, the loss of descriptive content; for adjectives, the loss of descriptive content (cf. the discussion of 'whole' > 'all' below and in 4.4); for prepositions, the loss of content relating to spatial relations (cf. the discussion of Greek *kata* in 4.4).

In other words, because it involves a particular kind of change in syntactic category, grammaticalization strips away the descriptive content and leaves the logical content associated with the reanalysed element. Because the content of functional heads is limited to logical content, when a lexical element becomes functional, it loses all non-logical content. We understand non-logical content in terms of permutation/isomorphism invariance, as described above.

The example von Fintel (1995) discusses is that of a universal quantifier, for example *all*. We considered the grammaticalization of this element in Greek out of the adjective *holos* > *olos* in Chapter 4, section 4.4. Following Haspelmath (1995:367), we assumed that the distributive/ universal reading arises in combination with a collective noun, so that an expression like *the whole family* can be interpreted as *all the family / every member of the family*. The reanalysed structure is given in (46) below:

(46) $[_{QP}$ *ola* $[_{DP}$ ta [..$[_{NP}$ spitja]]]

Notice that by being merged in Q, *olos* can no longer modify the noun, that is, there is no descriptive content to relate to that of the noun. Similar effects have been attested in our discussion of n-words in French. In Chapter 4, section 4.2.2 we considered in detail the reanalysis of words like *rien* and *personne*. In this case reanalysis is a bit more complex as the negative meaning arises as a function of the changes that affected D inside the DP (the unavailability of a null D as

an indefinite marker) and the *Agree* relation with clausal Neg. Leaving these changes aside, what is crucial is that due to these factors the original descriptive content of the noun is reanalysed as the restriction on a quantificational relation (of course, the restriction represents non-logical content, but as n-words in Num *personne*, etc. denote logical relations rather than purely descriptive content; this may be a way to characterize a semi-functional element – cf. also the discussion of *thelo* when merged in v above). We have observed similar developments in other cases: nouns such as *pas, dhen* and *shi* lose all their descriptive content in being reanalysed as negators (see 4.2.3).

In the cases just discussed above we have a lexical item being reanalysed as a functional one. We also allowed for a functional element being reanalysed as a functional one (e.g. modal particles and complementizers in Chapter 3). In these cases as well we argued that there is a semantic change involved. Given that the source of the reanalysis is a functional feature, the change here is a switch from one type of logical element to another. In a way, this makes these cases a bit less interesting than the ones discussed above from a semantic point of view (but not in terms of the structural change involved).

The notions discussed here open up the possibility of characterizing functional categories in a new way. Many functional elements clearly have logical meanings, in a sense that seems very close to that defined above. This is clearly true of quantificational elements in DP (occupying D, Q or Num). It is true also of modal elements, to the extent that these quantify over possible worlds. It is also true of negation, as this just defines a complement relation between sets. It may be true of Tense and Aspect, to the extent that these notions can be construed as quantification over times or events. Alternatively, Tense may be an ordering predicate (Stowell 1996), another kind of logical relation (see above). Complementizers, to the extent that they may be factive or irrealis, are connected to modality. The various degree markers which may make up a functional system associated with AP are also logical, as indicated in the discussion above. The status of demonstratives is unclear, however; perhaps Dem is not a functional category after all (this would not materially alter our discussion in 4.1; we could treat Dem as an AP). Finally, Agreement cannot be functional on this definition (see the discussions in 1.3 and 4.5), although, if split into Person and Number, as suggested in 4.6, Number could qualify. The question of the status of Person features also relates to the demonstratives; essentially the question here is whether first- and second-person features can be seen as logical elements.

Of course, the above remarks are somewhat sketchy. But the important point to note is that if in the lexical > functional reanalysis what remains is the logical

content, and given that the new item becomes the realization of a functional feature, then this logical content must be in fact the content of the functional feature in question. In other words grammaticalization provides us with a good way to understand the properties of functional categories. And the way to understand 'semantic bleaching' is precisely in terms of creating items whose meaning is purely logical, in the sense of isomorphism invariance as discussed above.

5.3.2 Speculations on phonological reduction

We have repeatedly observed that grammaticalization involves 'phonological reduction' of the grammaticalized element. Indeed, if we consider our cases in (1)–(18), we can observe that most of them involve some process of this type: English modals developed unstressed and reduced forms in the sixteenth century (see Plank 1984); *habere* clearly reduced first to a clitic and then an affix in becoming the future/conditional forms of various Romance languages; Greek *thelo* + *na* reduces to *tha*; *hina* reduces to *na*; Latin *modo* reduces to Calabrian *mu*; complementizer *that* can reduce, while demonstrative *that* cannot (as we commented in 3.4); Latin *ille* reduced to a monosyllabic form as an article (and object clitic) in Romance (Giusti (2001) suggests this was a crucial step in the reanalysis of these elements); Greek *oudhen* reduced to *dhen* as part of its reanalysis as negation; *kan* + *poios* reduces to *kapjos*; free relatives undergo a spectacular morphophonological reduction in becoming free-choice indefinites or universal quantifiers; and pronouns undergo a certain amount of reduction in becoming agreement markers. Thirteen out of eighteen of our cases of grammaticalization thus involve phonological reduction of some type.[10]

There is nothing novel in this observation. For example, Hopper and Traugott (1993:7) discuss the 'cline of grammaticality' in (47), and similar observations have been frequently made:

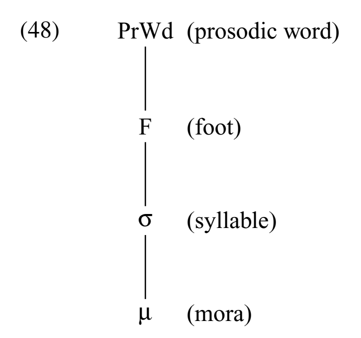
(47) content item > grammatical word > clitic > inflectional affix

Of course, phonological change goes on all the time, and is in principle quite independent of syntactic change. But the kind of phonological reduction which

10. Of the remainder, English *to* may have taken on the ability to reduce to /tə/ at the time of the reanalysis; the situation regarding serial verbs becoming complementizers is not known; Stage-Two negative words in French were already phonologically minimal, as was Greek *ti(s)*. The only true exception to the generalization regarding phonological reduction therefore concerns the French n-words (*personne*, *rien*, etc.), which appear to have undergone no phonological reduction at all in becoming functional. This may be a further reason to consider these items as semi-functional, as briefly suggested in the previous section.

is associated with grammaticalization appears to be more radical than standard phonological change, and of course only affects grammaticalized elements; it is not exceptionless in the traditional neogrammarian sense (cf. the different possibilities of reducing the vowel of the noun *can* and that of the modal *can* to schwa). Here we would like to relate these observations regarding phonological reduction to observations about the prosodic nature of functional categories in the synchronic phonological literature.

We mentioned in Chapter 1, section 1.3, that phonologically realized functional elements are typically unstressed and 'light'. In fact, it is clear that in many languages they fall below certain threshold prosodic values. In English, for example, monomoraic CV words are not found in the lexical vocabulary (Kenstowicz 1994:640). For this reason, one can define a minimal word in English as being bimoraic. However, Kenstowicz (1994:642) notes that 'elements drawn from the nonlexical class of pronouns, prepositions, and grammatical particles frequently escape minimality restrictions'. McCarthy and Prince (1986) make the notion of minimality more precise in terms of the prosodic hierarchy in (48):



Every foot must be binary, that is, disyllabic or bimoraic, and so monosyllabic or monomoraic items cannot be feet, and therefore cannot be phonological words. Kenstowicz (1994:643) comments 'A degenerate element can escape the normal stress rules and hence cliticize. Thus, clitics tend to be monosyllabic. These prosodic dwarfs reside primarily in the nonlexical region of the vocabulary'. Phonologically realized functional elements are thus typically subminimal in terms of the prosodic system of the language, and as such liable to cliticize. Since clitics are phonologically bound elements, there is a natural propensity to reanalyse them as morphologically bound elements, that is, affixes; in fact, in section 5.2.3 above we treated this development as $F^*_{\text{Move/Merge}} > F^*_{\text{Move}}$. In

these terms, then, we can naturally relate the emergence of $F^{*}_{Move/Merge}$ to the clitic status of the exponent of F.

Here is a list of 'weak forms' in English, from Gimson (1980:261–263):

(49)

	Unaccented	Accented
a	ə	ei
am	m, əm	æm
an	n, ən	æn
and	ənd, nd, ən, n	ænd
are	ə(r)	a(r)
as	əz	æz
at	ət	æt
be	bɪ	bi:
been	bɪn	bi:n
but	bət	bʌt
can (aux)	kən, kn	kæn
could	kəd, kd	kud
do (aux)	du, də, d	du:
does (aux)	dəz, z, s	dʌz
for	fə(r)	fo:(r)
from	frəm	from
had (aux)	həd, əd, d	hæd
has (aux)	həz, əz, z, s	hæz
have (aux)	həv, əv, v	hæv
he	hɪ, i: ɪ	hi:
her	hə, ɜ:, ə	hɜ(r)
him	ɪm	hɪm
his	ɪz	hɪz
is	s, z	ɪz
me	mɪ	mi:
must	məst, məs	mʌst
not	nt, n	not
of	əv, v, ə	ov
Saint	sənt, snt, sən, sn	seint
shall	šəl, šl	šæl
she	šɪ	ši:
should	šəd, šd	šud
Sir	sə(r)	s3(r)
some (pl indef)	səm, sm	sʌm
than	ðən, ðn	ðæn
that (C)	ðət	ðæt
the	ðə, ðɪ	ði:
them	ðəm, əm, m	ðəm
there (expl)	ðə(r)	ðϵə(r)
to	tə, tu	tu:

	Unaccented	Accented
us	əs, s	ʌs
was	wəz	woz
we	wɪ	wi:
were	wə(r)	wɜ(r)
who	hu, u:, u	hu:
will	l	wɪl
would	wəd, əd, d	wud
you	ju	ju:

Here a striking pattern emerges in nearly every case: the unaccented form is subminimal (it is almost always monomoraic, i.e. containing something smaller than CVC or CV), the accented form is at least bimoraic, and nearly all the elements capable of being unaccented are functional. The unaccented forms are, of course, the usual ones in connected speech, unless the element in question is contrastively stressed. All the CVC unaccented forms contain schwa, which cannot be stressed in most varieties of English. So we observe a very clear correlation between functional elements and having the status of a 'prosodic dwarf', to use Kenstowicz's term.[11]

This correlation is borne out by the observation that certain items may be either functional or lexical; when functional they can be unaccented, when lexical they cannot be. We have already commented on *can* (noun) versus *can* (aux) in this respect, as well as *that* in Chapter 3, 3.4. Above we see that both *do* and *have* pattern in this way: main-verb *do*, for example, as in *I do university administration every morning* cannot be reduced to /də/ or /d/, unlike auxiliary *do* in an example like *Do universities serve any purpose?* Similarly, the ability to reduce *have* correlates with its auxiliary syntax, as the following examples show:

(50) a. John hasn't left.
b. %John hasn't a car.

(51) a. John's left.
b. %John's a car. (in the interpretation 'John has a car')

The cases of *some* and *there* are similar, although the singular quantifier *some*, which cannot reduce, may be a problem.

11. There are some Prepositions in the list in (49): *at, for, from, of* and *to*. Of these, *for* and *to* are also C elements (see Chapter 3, 3.3). Regarding the others, it may be that these are 'functional prepositions'; it has often been observed that the class of prepositions may be divided into functional and non-functional elements. A good example of a non-functional preposition is 'through', see the discussion in Chapter 4, 4.4. Appellations such as *Saint* and *Sir* may be Ds.

In general, then, we can observe a correlation between prosodic subminimality and functional elements. We can therefore understand why grammaticalization, understood as the creation of new functional material, may involve phonological reduction. Where a lexical element is reanalysed as functional, the reanalysis must involve phonological reduction if functional categories are required to be subminimal. The evidence we have seen is compatible with the idea that functional categories are in fact obligatorily subminimal.[12]

Italian, as discussed in Vogel (1999), provides further evidence for the same conclusion. Vogel (citing Bullock 1991, Repetti 1989, 1991, Vogel 1994) assumes that the minimal word in Italian consists of a bimoraic foot. She points out that rather few words are actually minimal (mentioning *bel* 'beautiful (m.sg.)' and *fai* 'you(sg) do' among others). Among the subminimal words of Italian are the pronominal clitics, which consist of a single light syllable (e.g. *lo* 'him'). Other elements which consist just of a single light syllable are the articles and the complementizers *che, di* and *a* (again, note that the last two are also prepositions). So here we observe a similar correlation between functional categories and prosodic subminimality to the one we saw for English. No doubt this kind of observation could be repeated in other languages.

Now, the above discussion has naturally concentrated on F^{*}_{Merge}, the case where a functional category has an overt realization. The other possible parametric values of functional categories are also phonologically defective, and in fact can be seen in the same light as being prosodically subminimal. $F^{*}_{\text{Merge/Move}}$ is naturally related to the clitic status of the exponent of F, as mentioned above. F, the case where there is no phonological realization of the category, can clearly be seen as an extreme case of subminimality. Recall from Chapter 1 that we observed that lexical elements always have a phonological matrix (although they may of course be subject to operations like ellipsis and gapping, however these are to be characterized; in Chapters 2 to 4 we postulated structures containing radically empty VPs and NPs, but this does not alter the fact that the lexical entries of lexical categories are always associated with a phonological matrix); this can also be understood in terms of the minimal word requirement applying to fully lexical items. Finally, F^{*}_{Move} can be thought of as a phonological specification: the *-diacritic requires an element lacking its own lexically given

12. In fact, functional categories are not obligatorily subminimal, as quantifiers like *every* show. The relation is a one-way one: if an element is reduced, then it is functional. But there is a clear propensity for functional heads to reduce (and non-functional categories do not reduce). The semantic criterion discussed in the last section will, of course, define quantifiers like *every* as functional.

phonological matrix to have one, and so it triggers movement (before Spell Out) of some appropriate element (presumably one it Agrees with – see Chomsky 2000, 2001). So the parametric properties of functional categories are all differing instances of the fact that these categories are prosodically subminimal (this can clearly be extended to the wider range of parametric options given in (33')).

One final point: recall that we are adopting the standard view in principles-and-parameters theory that language acquisition involves parameter setting. The parameters we have proposed all involve the realization (or the lack of realization) of functional categories. In this section we have suggested that functional categories are inherently prosodically defective. This means that many of the cues – those in (36b) above – for parameter settings reside in perceptually non-salient parts of the input string: unstressed, subminimal formatives. This naturally places a burden on the language acquirer and creates the possibility of the kind of 'mis-setting' of parameters that leads to language change (of course, movement itself is another type of cue for parameter settings; this raises different considerations).

In this section, we have suggested that there is a phonological characterization of functional categories: they are prosodically subminimal elements. In the next section, we will speculate as to why this should be.

5.3.3 A speculative characterization of functional categories

In this section, we will try to put together the proposals made in the previous two sections, in order to arrive at a tentative characterization of the nature of functional categories. Our proposal is that functional categories are inherently defective at the interfaces, and, as such, are categories with highly reduced lexical entries.

In section 5.3.1 we suggested a semantic characterization of functional categories as being restricted to purely logical denotations, in the sense of isomorphism invariance as described there. In 5.3.2 we observed that functional categories are typically prosodically subminimal. Putting these two ideas together, we can make the following observation:[13]

(52) Functional categories are defective at the interfaces.

13. The idea being put forward here is conceptually similar to Cardinaletti and Starke's (1999) proposal regarding structural deficiency. The implementation of the intuition is rather different, however.

To see what (52) means, compare a volitional verb, such as English *want*, with a future marker such as reduced '*ll* of spoken colloquial English (similarly, one could compare Latin *habeo* with Late Latin/Early Romance *aio*, or perhaps Classical Greek *thelo* with Modern Greek *tha* – although in the last two cases the prosodic facts are not entirely clear to us). As discussed in 5.3.1, *want* has an argument structure and a non-logical denotation; it is also larger than the minimal English word (it is CVCC, and therefore clearly bimoraic). Its lexical entry must therefore contain information regarding its argument structure and its prosodic structure; in other words, a range of interface properties need to be specified. Of course, this word also has formal syntactic features, at least V (or perhaps [+V, −N]) and maybe a specification of its Case-assigning properties. The reduced auxiliary '*ll*, on the other hand, lacks both argument structure and prosodic structure. Its semantic content is arguably exhausted by the feature Future, its phonological content by /l/. However, it has a syntactic categorial feature, T.[14] Thus the basic difference between lexical and functional elements is summarized by (52). Call this the Interface Defectivity Hypothesis (IDH). The IDH allows us to reduce the semantic bleaching and phonological reduction (each construed more precisely as in 5.3.1 and 5.3.2 respectively) associated with grammaticalization to the kind of syntactic categorial reanalysis which we have documented in the foregoing chapters. Semantic bleaching and phonological reduction are consequences of the reanalysis of lexical categories as functional categories.

Moreover, if the IDH is correct then we have a theoretical tool which we can use to characterize the inventory of functional heads. This, of course, should be matched with the empirical evidence attested cross-linguistically. This can also take us one step towards a characterization of the functional structure of the clause, and of other functional domains, notably DP. We return to this point below.

In recent work (Marantz 1997, Chomsky 2000, 2001:43), it has been suggested that categorial features such as N, V, etc. are to be dispensed with. If so, then functional features play a still bigger role in the basic syntactic computations (Merge and *Agree* in particular) than previously. Moreover, lexical

14. We are slightly simplifying matters here in order to illustrate our proposal. *Will* has a residual volitional sense, visible in particular in examples like (i):

    (i) I won't do it!

    It also has a CVC form, and as such is (just) a minimal word. These facts may indicate that *will* is in fact semi-functional; cf. the suggestion in Chapter 1, 1.1, that root modals are inserted in v.

elements have no intrinsic formal features at all.[15] Combining this idea with the IDH, we arrive at a near-perfect complementarity: functional categories bear all and only the features relevant for the syntactic computation; lexical categories bear all and only the interface features. If the syntax is seen as the optimal way to satisfy interface properties for a certain array of lexical items, then we can understand why functional categories must be present, since they are items which make this procedure possible. The IDH thus tells us why functional categories are so ubiquitous.

Of course, the complementarity between lexical and functional categories is not perfect, in that functional categories can have phonological properties (albeit reduced) and must have logical properties. It follows for Chomsky (2000, 2001) that they must have interpretable features (see Chomsky (2000:138–139)), and we suggested in 5.3.1 that these features are semantically limited in a particular way. So what needs to be explained is why they can have phonological features. We have already speculated (see 5.2.1) that as far as the computation to LF is concerned, functional categories need have no PF properties. So we need to understand why they have just the limited PF properties they have. We conjecture that the answer to this is very simple: we have seen that functional categories lack prosodic properties, which are clearly a major feature of phonological structure. Aside from requiring that functional categories lack phonological structure in this sense, no restriction is imposed. Hence functional categories vary randomly, below the minimal level for participation in prosodic structure. This line of reasoning explains the existence of parametric variation with the form it has. The different options for F in (33) and (33') are simply different manifestations of F's subminimality.

We can gloss the IDH in relation to the restriction to logical content on the LF side as follows: our claim that functional categories are restricted to logical meanings amounts to treating them as logical constants. Logical constants are the simplest elements of a logical system. More specifically, since functional categories lack interface structure, then we can surmise that this means that they can have only logically atomic properties – more complex denotations (involving relations with the world, or predicate/argument structure) are not allowed.

Finally, we can understand the simplicity metric in (23) in a similar light. Feature syncretism involves structure (in that the two features must stand in some kind of relation), and so is to be avoided. To summarize these speculations, then, we can conclude as follows:

15. This entails not viewing θ-roles as formal features, *pace* Hornstein (1999), Manzini and Roussou (2000), and taking Accusative Case to be a property of v (as is standard).

(53) Functional categories are atomic, in that they (preferentially) lack structure in syntax, and obligatorily lack it at the interfaces.

(Here ‘preferentially’ is to be understood in relation to the learning device, not UG.) The statement in (53) can explain semantic bleaching, phonological reduction, the nature and existence of parametric variation with the properties assumed here and, through (23), the nature of syntactic change and the existence of markedness. As such, it goes a long way towards explaining many of the apparent imperfections of language, including not least the propensity to variation and change in time and space. For these reasons, although it is highly speculative, we think that (53), and its congeners (23) and the IDH, are worth thinking about.

5.3.4 Remarks on the functional hierarchy

Here we restrict ourselves to a few comments on the functional hierarchy, applying some of the conclusions of the foregoing sections where relevant. Of course, this is a very large topic which we cannot begin to do justice to here, and our remarks should be taken as anything but definitive.

In order to determine what the functional hierarchy is, two things are required. The first is to identify the number of possible functional heads. In the previous section, we offered a general characterization of functional heads, which ought in principle to be able to provide an answer to this question. The second step involves the ordering of these functional heads, that is, how exactly the universal ordering is derived.

Cinque’s (1999) system is an attempt to characterize these positions in terms of the empirical evidence provided by the distribution and realization of adverbial, auxiliary and affixal elements. This distribution determines not only the nature of functional categories but also their relative order. We gave a preliminary version of Cinque’s hierarchy for the ‘IP domain’ in Chapter 1, (18), which we repeat here as (54):

(54)

Mood$_{\text{Speech Act}}$	Mood$_{\text{Evaluative}}$	Mood$_{\text{Evidential}}$	Mod$_{\text{Epistemic}}$	T(Past) T(Future)
Mood$_{\text{Irrealis}}$	Mod$_{\text{Necessity}}$	Mod$_{\text{Possibility}}$	Asp$_{\text{Habitual}}$	Asp$_{\text{Repetitive(I)}}$
Asp$_{\text{Frequentative(I)}}$		Mod$_{\text{Volitional}}$	Asp$_{\text{Celerative(I)}}$	T(Anterior)
Asp$_{\text{Terminative}}$	Asp$_{\text{Continuative}}$	Asp$_{\text{Perfect(?)}}$	Asp$_{\text{Retrospective}}$	Asp$_{\text{Proximative}}$
Asp$_{\text{Durative}}$	Asp$_{\text{Generic/progressive}}$	Asp$_{\text{Prospective}}$	Asp$_{\text{SgCompletive(I)}}$	
Asp$_{\text{PlCompletive}}$	Voice	Asp$_{\text{Celerative(II)}}$	Asp$_{\text{SgCompletive(II)}}$	Asp$_{\text{Repetitive(II)}}$
Asp$_{\text{Frequentative(II)}}$	Asp$_{\text{SgCompletive(II)}}$			

The resulting order roughly involves a series of aspectual heads above V, above which there lies a series of modal heads, above which are the T heads, and

finally above these is a further series of modal heads. The latter may relate to discourse properties. The question that arises in a system of this type is where DP arguments fit in this system, or, for example, where quantificational elements (e.g. wh-words) go. Furthermore, a related question arises with respect to the DP-internal structure, although Cinque assumes that it is in parallel with that found in the clausal system, as the positions and ordering of attributive adjectives show. In addition, a structure of this type is assumed to be embedded under a complex C system of the type proposed by Rizzi (1997) (and see Chapter 3).

On the other hand, Chomsky (1995, 2000, 2001) takes a rather conservative view and identifies three basic functional heads C, T, and D, leaving open the possibility that these are cover terms for more complex systems.

Just by looking at these two rather different approaches we identify a common theme: namely, the division of the clausal domain in three basic parts (above V, above T and above C). This is in fact rather well accepted in the literature (cf. Cardinaletti & Starke 1999, Grohmann 2000, Platzack 2001). This is further supported by Belletti's (1999) proposal to iterate the projections found in the C system (Topic, Focus, etc.) in the space immediately above VP (the right periphery). A rather similar stand is taken by Manzini and Savoia (forthcoming) who identify these positions with clitic shells (in the sense of Sportiche (1996)) and argue that each shell can be projected above V, above I and above C (simultaneously in some cases). The clitic shell consists of the positions typically associated with the DP, thus bringing out the intuition that there is a correspondence between the nominal and the clausal structure.

As the above brief discussion shows, one very interesting generalization that emerges, despite the differences of approach and execution, is that functional heads can repeat themselves in different domains: this has been repeatedly observed for negation and modality, and may be true for focus and topic, if Belletti's proposals are correct. There thus appears to be a cyclic structure to the functional hierarchy. This also has an important implication for the theory of grammaticalization that we have been pursuing in the present book. If there is in fact repetition of features within the hierarchy, then certain kinds of reanalysis do not seem to be so unexpected. We raised this point in connection with the similarities between C, D and P and the reanalysis of P *to* as a C (M) element (see Chapter 3). We also observed similarities between the reanalysis of N to Num (e.g. n-words, see 4.2.1) and V to T (e.g. modals, see 1.1).

It seems likely that the functional structure consists of the iteration within the different domains of the same sequence of categories. Cardinaletti and Starke (1999:184f.) propose the structure C – Σ – I – lexical category. It is rather difficult to give these categories a general characterization, and we will not attempt to do so here. Instead, we simply observe that the same or very similar

diachronic processes appear to operate across each domain, as we have seen in the foregoing chapters, and that our characterization of functional categories predicts three things: (i) that these hierarchies will vary randomly in their PF realization from language to language, although functional categories will tend to remain prosodically subminimal; (ii) that the denotations of the functional categories are isomorphism-invariant; (iii) that feature syncretism is avoided. The last point is rather important, in that it suggests that the fields cannot obviously be defined by a system of intersecting features, for example C = [+Ref, +V], D = [+Ref, +N], etc. (Cardinaletti & Starke 1999 employ a system of this sort). The only natural alternative is that the systems are defined semantically in terms of the types of individuals over which they quantify (note that it is natural to see all functional heads as quantificational, given what we said in 5.3.1), namely C heads quantify over propositions, T heads quantify over events, and D heads over individuals. This conclusion implies that the way to understand functional structure is by understanding quantification.

5.4 Conclusion

In this work we have attempted to give a general formal characterization of grammaticalization, the process by which new exponents of functional categories are created. We have argued, on the basis of eighteen case-studies from a range of languages, that grammaticalization involves structural reanalysis so that some new element comes to be merged in a functional position F. The structural reanalysis is always simplification in the precise sense defined by the simplicity metric in (23), repeated here:

(23) A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains fewer formal feature syncretisms than R'.

We described above how (23) provides the basis for a theory of markedness of parameter values, and how changes which create more marked structures may in fact be consistent with (23). Finally, in this chapter we have sketched a general characterization of functional categories, which can explain why grammaticalization is associated with phonological reduction and semantic bleaching. For us, this is the direct consequence of the development of new functional material.

One question we have only touched on in passing concerns the type of material which is prone to grammaticalization. In Chapter 1, we mentioned isolated morphological subclasses such as the OE/ME preterit-presents and second-conjugation stative verbs in Latin. It is also no accident that the English

premodals were intensional verbs, so of course was Greek *thelo*, which gave rise to the future marker *tha*. The particles reanalysed as irrealis markers in M, discussed in Chapter 3, also had an intensional meaning ('in order to' or 'unless'). Of the cases discussed in Chapter 4, it is clear that generic nouns naturally develop into indefinites of various kinds (and thus into n-words and/or wh-words); we suggested that this happens when the descriptive content of the noun can be reanalysed as the restriction on a quantifier. Finally, the reanalysis of pronouns as agreement markers involves no change in phi-features, but simply a loss of the ability to bear a θ-role. It is not clear what generalizations emerge from all this: we suggest in fact that the reanalysis which underlies grammaticalization will act on any available lexical material, as long as it can be reconstrued as functional along the lines described above. The variety of cases discussed by Heine and Kuteva (2002) supports this: the noun 'child' may be reanalysed as a partitive (p. 67), 'ear' as a locative marker (p. 121),[16] 'song' as a noun classifier (p. 280). So we make no generalizations on this point. Once an element enters the functional system, it will tend to be reanalysed successively upwards in the structure, and this creates grammaticalization paths, as we pointed out in section 5.1.

In the Introduction, we identified several larger themes in the book. One was the tension between a descriptively adequate account of grammaticalization paths and the standard principles-and-parameters view of language change as a random walk through a space defined by the range of parametric variation. We tried to show in section 5.1.3 above that this tension can be resolved in terms of an independently motivated account of the relative markedness values of different parameters. Markedness effectively creates 'basins of attraction' in the parameter space, and thereby causes grammatical systems to 'clump' around certain combinations of options.

Another issue was the characterization of a possible functional category. We looked at this in section 5.3, and tentatively suggested the IDH, and then the idea that functional categories have no structure, put forward in (53). The IDH is supported by and supports our analysis of grammaticalization. We believe that in this connection we have been able to provide a new perspective on the nature of functional categories by looking at their diachronic development.

Finally, since we are framing our analyses in terms of (a variant of) Chomsky's minimalist programme, we should ask ourselves whether our work has shed any

16. In fact, it is not clear whether this case fulfils our criterion for grammaticalization, since it is not clear that locative markers are functional. See the discussion of 'through' in 4.4, as well as 5.3.1.

light on the question of the nature of C_{HL} as a perfect system. We believe that it may have. We remarked at the end of section 5.3.3 that the general idea that functional categories are atomic in structure may underlie the following properties:

(55) a. semantic bleaching (they have the minimal LF structure, cf. the IDH);
b. phonological reduction (they have the minimal PF structure, cf. the IDH);
c. the nature and existence of parametric variation (PF is indifferent to all properties except prosodic subminimality, hence random PF variation);
d. the nature of syntactic change (random diachronic variation in PF properties);
e. markedness (the interaction of (23), derived from (53), wth (d)).

Explaining the nature of syntactic change, as we believe our proposals do, entails explaining the nature of synchronic variation, since synchronic variation is just the result of diachronic changes. So our proposals about functional categories can explain not just the nature, but the existence, of parametric variation.

If the above ideas are correct, a major feature of natural language is accounted for in a straightforward way. The existence of functional categories, movement and parametric variation is quite mysterious in the framework of Chomsky (1995, 2000, 2001) and is considered to be at least an apparent imperfection of the system. In the approach outlined here, we can explain the imperfections in terms of (53). Interestingly, (53) is a natural aspect of a perfect system; it is simply a definition of the atomic elements of the system. But the system in question, C_{HL}, must interface with LF and PF. The simplest system-internal properties give rise to system-external complications, particularly in the case of the PF interface, precisely because the syntax is indifferent to certain formal aspects of the interfaces. Since the PF interface creates the input to language acquisition, the imperfect mapping from syntax to PF gives rise to variation and change in acquisition, and therefore in grammatical systems generally.

We conclude that Chomsky's conjecture that the computational system that forms the syntax is perfect is not impugned by the existence of such an apparent imperfection as variation and change in time and space. These properties, that is, the simple existence of different grammatical systems in both synchrony and diachrony, follow from the interactions – or lack thereof – between the computational system and the PF interface.

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